The Builder.

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The Smaller Classical Museums of Northern and Central Italy.

IN the matter of classical archæology, modern Italy is doing her best to redeem a mis-spent past. Treasures of *art* she has always cherished with an eager, if somewhat ignorant, reverence; the materia of *archæology*, which has an interest and a charm, scientific instead of sensuous, she too often ruthlessly destroyed. Every lover of art has stopped to look at the wonders of Greek vase-painting gathered together in careful selection in the Etruscan Museum of the Vatican, but every archæological student has ached with the remembrance of thousands of inferior specimens wilfully broken up as mere unsaleable "roba," at the mouth of the tombs whence they were dug. But such things are of the past. The South sent her message of beauty to the North, and the North has made fitting answer by the colder voice of science. On the summit of the Capitoline Hill stands the German Archæological Institute, and there North and South have met together and two,—that would be foes, and should be friends,—art and archæology, have kissed each other.

The right method once inaugurated in Rome spreads quickly to the provinces. Arezzo, Cortona, Chiusi, Orvieto, Corneto, and the like, are all learning that honour, and even profit, come not from the blazoning forth of one or two show antiques, and the fabrication of countless shams, but from the careful and complete excavation of their own local necropolis, and the systematic exhibition and classification of the results. Even so late as five years ago exact information was difficult to obtain in any local collection. The student, as opposed to the purchaser, was a hybrid to be discouraged. Attentive study of a vase or a relief, was supposed to be the preliminary step to a course of bargaining. More vexatious still, the guardianship of archæological treasures was given over into the hands of custodians as superstitiously jealous as they were ignorant. The old order is not quite passed away, but the new is steadily advancing; the local cicerone still lives, and alas! still lies, but, for the most part, he is supplanted by the authorised and scientifically compiled catalogue. We purpose to gather together a few of the instances in which, specially as regards collections of Greek vases, marked advance has been made.

If we wish to study Greek sculpture we must study what has been found, and still to a large extent remains, in Greek lands. If we want to study Greek vases we must, owing to the accident of Etruscan fashion and Etruscan trade, study what has been found and largely still remains in Italy. The museums of Northern Italy are, naturally, not rich in art treasures, which have been the chief yield of Etruria; but a few scattered treasures have found their way into the museums of Turin and Milan, though, because they are isolated, not into north Italian Guide-books. Egyptologists, of course, know their Turin, but for the classical student there is a small collection of Greek vases, which contains one specimen of special interest, a signed vase by Euthymides. Dr. Klein, in his recent list of signed vases, notes eleven by this master, and to his list we may add the Turin vase as a twelfth. In Milan, if the traveller can disengage his attention from the sensational architectural splendours of the city, he will find, in collections given over for the most part to Mediæval "roba," one or two classical matters worthy of note. Foremost among these, in the Museo Archeologico,—now in the basement of the Brera Palace,—is a very primitive bronze situla. It was found in a grave near the Villa Giovio, about three-quarters of an hour from Lake Como. The situla is decorated with *repoussé* work, consisting entirely of a succession of dots. The designs are very crude and early: a frieze of men on horseback, or rather attached to the sides of their horses, for there is no attempt to depict them as riding,—men on foot; stags with branching horns; a doe suckling her young: this last drawn with a very vigorous naturalism. With the situla was found the armour of the dead warrior. The whole contents of the tomb are carefully published by Sig. Biondelli, who supposes the tomb to have belonged to a Gallic warrior. Anyhow, it is of the highest interest as a specimen of local Italian art, before it was subjected to Greek influence. Milan has a right, of course, to her own discovery; but we wish that these rare specimens of early Italian work could be collected together, as their juxtaposition might possibly make some sort of chronological classification possible. Beyond this situla the Museum has scarcely anything of classical interest. A fragment of a wall-painting from the Farnesina, a Roman lamp, representing Actæon and his dogs; and another, with a design of Cupid among flowers, and three small bronzes, *i.e.*, a Spinario, a crouching Venus, and a Mars resting in the pose of the Ludovisi-Mars, a small marble copy of the Capitoline Satyr, and a Greek gravestone, complete the list.

The city of Milan has recently been enriched by the gift to the municipality of the Poldi Pezzoli Collection. The collection under the title, "Fondazione artistica Poldi Pezzoli," is preserved in exactly the same state that it was at the death of the possessor, and the magnificent rooms, furniture, &c., add greatly to its attractions. No one will pass over the fine paintings of Leonardo da Vinci's school, nor the splendid specimens of sixteenth-century enamel work; but the catalogue recently issued makes no mention of the classical gems of the collection. In the Sala Dorata are two small one-handled wine-cups (*cyathoi*), white ground, with black figures. On the one is represented a scene of grape-gathering. Two satyrs perched high up in a vine are busy filling baskets with huge bunches of grapes; on each side of the grape-gathering scene are the familiar "Dionysiac" eyes. This cup is a marvel of delicate execution; the careful balance of the two satyrs, the symmetry of the clusters of grapes, and even of the two baskets, make it also a tiny marvel of composition. The companion cyathos is of exactly the same shape and technique, but slightly inferior workmanship. The design represents mænads and satyrs on each side of a recumbent Dionysos. The design is framed on each hand by heraldic griffins. Two vases of such conspicuous beauty could not have so long escaped notice and publication, but that they are of small size, and are hidden in the depths of a museum mainly modern and Mediæval.

Passing on to Parma, if the student can steal an hour from the study of Corregio, he will find in the Palazzo della Pilotta a small and remarkably well-arranged museum of antiquities, recently re-organised. Among them the contents of an Etruscan tomb found in 1882 near the Porta Garibaldi are especially noticeable, also collections of Græco-Roman antiquities found at Velleia. Among its vases the Parma collection contains the amphora with two scenes between Odysseus and Circe, a subject extremely rare on painted vases. This Parma vase is well known, but in the museum at Bologna we noted a second instance of the same subject, which seems to have escaped hitherto the notice of collectors and monograph writers. Nor is this a matter of surprise, for the vase had suffered severely from fire, and the design, though clearly traceable when once perceived, is, failing the clue, almost undecipherable. It represents Circe, who has started up in alarm from her seat at the threatening approach of Odysseus; to each side the comrades of Odysseus (all with beast-heads) are escaping in various attitudes of amazement and despair. Save for this vase the collection at Bologna is too well known, and through the courtesy of its director, Count Gozzadini, too easily accessible to students, to

need description. In spite of some recent acquisitions its principal attractions still remain the monuments from the Felsinean Necropolis, arranged, displayed, and catalogued in a way that is a model to all Italy.

The Greco-Etruscan museum at Florence is less sumptuously circumstanced than that of Bologna, but its arrangement is not less admirable. The director (Professor Milani) had before him a far more difficult task. In the case of recent excavations, such as those which have in the main supplied the Bologna Museum, the director has but to keep together the objects found in one tomb, and he secures a classification, if not absolutely chronological, at least highly instructive; but where, as in the case at Florence, the Museum is made up of odds and ends, vases that have come out of private collections, discovered no one knows when or where, then obviously classification must be based on internal evidence. Professor Milani is a good representative of the rising school of young Italian archæologists, trained in Germany for the best of reasons, *i.e.*, that till quite recently Germany has been the only possible place for training. His museum is a model of careful, systematic work. Here, and here only, so far as our knowledge goes, has some attempt been made to classify the vases known as "bucchero nero." Nearly every painted vase of importance in the museum has been photographed, and is thus available for study all the world over. Perhaps the time will come when it will be part of the business of the director of every museum to see that the monuments under his care are thus made readily accessible. The catalogue of the museum is not yet complete.

To pass from Florence to Arezzo is a long descent in the archæological scale, but Arezzo is fully aware of its importance as the ancient centre of a strictly local manufacture of a peculiar sort of red ware, with designs impressed in relief. The museum once in the charge of the Fraternità dei Laici is now in process of rearrangement, and the Accademia Petrarca has published a small guide-book in which scraps of archæology are oddly mixed up with lives of the celebrities of Arezzo and notices of the principal alberghi. A fine collection of miscellaneous antiquities has been got together, and is most courteously shown to visitors, by a local architect, the Cavaliere Funghini; its chief strength lies in majolica, but one room is devoted to Etruscan urns and red Arezzo ware.

Leaving Arezzo, we come to the country proper of Etruscan shades, where every city and every museum is set on a hill, and results are not always duly proportioned to difficulty of access. Cortona still rests her claim to archæological fame on her enigmatic "Muse" and her lamp with eight Sirens; but for these and the lovely view of the Thrasymene lake there is little to tempt the archæologist to climb the hill.

It is otherwise at Perugia. The long-standing collection of Etruscan antiquities in the University has recently been increased by the bequest of the whole of the Guarda-Bassi collection. The Cavaliere Guarda-Bassi had been a collector from quite early youth, and one who had tempered his zeal with discretion, so that the collection is a fine one. It is a subject for great rejoicing when a private collection merges in a public museum. Family pride can be sufficiently gratified if the collection still bears the founder's name, and the risk of dispersion by illiterate or impecunious descendants is obviated. The gem of the Guarda-Bassi collection is, undoubtedly, a beautiful bronze mirror case, with Bacchus on a panther in relief. The vase collection of the University museum is not a large one, but it contains a few pieces of great interest. Most of these are catalogued in an admirable little guide compiled by Angelo Lupatelli; but there is one noticeable omission. Whether the vase we are about to speak of has been added since the publication of the guide we could not, in the absence of the director, ascertain, but in one of the wall-cases of the fourth room we came unexpectedly on the famous Troilos vase, by the potter Euphronios. The vase is perfectly well known, published by Gerhard, and fully discussed by Dr. Klein ("Euphronios," p. 9). It was found at Vulci, and once belonged to the Canino collection; but Dr. Klein says of it that the last news of it was that it was sold by auction in Paris, and of the buyer no record kept. How it came into the Perugia Museum we are unable to say, but there it undoubtedly is, and, alas! in very bad condition. At Orvieto, just opposite the great cathedral front, within a stone's throw of Luca Signorelli's demons, are two fine vase collections,—one belonging to the Municipality, the other the private property of Count Faina, but, with the utmost generosity, always open to the public. In this latter collection, by far the finer of the two, are some fine specimens of the Corinthian Kelebe. A complete catalogue is shortly to be published, and will be a very important contribution to the literature of vase painting.

We have kept Corneto to the last because it has an importance all its own. The excavations made year by year and still continued in the necropolis of Tarquinii, are fast raising the Corneto museum to the highest rank. It is at present under the able supervision of Signore D'Asti, and contains some of the finest specimens of Greek vase-painting extant. At present no classification is attempted; as year by year brings new material this material is set aside and marked with its date. This classification, though not, of course, attempting to be scientific, has, for the archæologist who seeks to keep himself *au courant*, obvious advantages. Five minutes in the museum will tell him what is new since his last visit. The "find" of 1884 has not been a very large one, but it has yielded a remarkable archaic amphora inscribed and decorated with the exploits of Herakles and Iphitos. This vase is in process of publication by the German Archæological Institute at Rome. In fact, at Corneto no one has a chance against the Germans; every archæological prize of any importance is instantly pounced upon by the watchful Prussian eagle who sits upon the Capitoline Hill. Scarcely a day passes at Corneto without bringing to light some fragment of antiquity. As we went to the outlying Etruscan tombs we passed a trench newly sunk from which two heads of Etruscan type roughly carved had, the day before, been excavated; they lay still by the side of the trench.

A good many of the private collections once existing at Corneto have lapsed; the collections of the Palazzi Boccanera, Falzacalpa, Margi, are no more, but the Bruschi collection is still kept together. Perhaps nowhere does the vase-student suffer keener pangs. With all courtesy he is admitted; he is begged to honour the house with his name and signature; he is even permitted, though under strict vigilance, to handle the vases. But publish one, even sketch one,—never! And yet that collection contains a priceless Centaur cylix, signed by the potters' names, Aristophanes and Erginos, a matchless archaic amphora with the wrestling of Peleus and Thetis, a Dionysos in a racing galley on a black-figured amphora, beautiful enough to set any archæologist's heart longing, and he must go away and leave them unknown and, what is worse, insecure.

On the whole, matters are hopeful for local archæology in Italy, but, there is no denying it, the subject has still its seamy side, and a seamy side apt to be excessively irritating to the student. The boundary line between *custode* and *direttore* is still in Italy of delicate and anxious demarcation. The civil *custode*, to whom last year you gave a couple of francs, is this year a *direttore*, bristling with importance and red tape. You ask him a question meekly enough, and as he makes answer the misgiving steals over you that this gentleman's academic baptism has not been by total immersion. Thinking in your simplicity that archæology is neutral ground, you arm yourself with a letter from some Government official of high place and, gladly confident, present it at the local museum only to find that the director is an ardent son of the Papacy, and that the door is closed to you for ever. Or you arrive at some obscure village on the festival of the patron saint: in two hours the diligence will start which is your only hope of return to civilisation for at least a week, and in those two hours the local museum is to be seen; local cults are interesting, but it is trying to find the director prostrate before his patron's skull with the museum keys in his pocket. The Italian innkeeper still survives, *splendide mendax:* as you wearily consume your almost impossible food he still spreads before you his cheaply manufactured "antichita," which, believe him, his own hands took from an Etruscan tomb; only last night he sold half his treasure to an English milord, and another is coming to-morrow; now is your chance. You decline indignantly and rashly embark in a protest against imposture, for next morning you pay the price of the rejected "antichita" in the shape of exorbitant charges for your sour bread and sourer wine. At another time you have come far to see some particular vase long enshrined in your memory, and you hear with some sinking of heart that the collection is about to be moved: the smiling Sindaco of the place conducts you up three flights of steep stairs only that you may gaze panting on packing-cases sealed with official seals. You offer to return in three weeks or a month; when will they be unpacked? you ask, and the true Italian answer meets and confounds you, "Chi lo sa?" Or, worst of all, you see the object of your desire before you, but high aloft in a glass case, dark with dust and closely locked, and by your side is a boy or girl of ten years old, vested with municipal authority and the keys, or, perhaps, some half idiot old harridan, or all three, and in chorus they declare that the cases may not be opened, that their life is in danger if they do your bidding; but a franc all round soothes them, and the keys are in the lock, but they never turn,—probably never have turned. They are not keys that fit at all, only symbols to terrorise the intruder and make him pay black-mail.

These and like sorrows await the seeker after knowledge in the byways of classical lands; but, for all that, if in his heart he carry some love of human nature and a great patience, and in his purse abundance of small change, he will leave Italy well instructed and still better amused.

THE DECORATION OF THE PANTHEON AT PARIS.*

BY CHARLES YRIARTE.

AT the entrance of the vestibule, to right and left, the two portions of cross wall, bounded by two pilasters, were entrusted to MM. Bonval and Galland; the longitudinal wall on the right was delivered over entirely to M. Puvis de Chavannes, and that on the left to M. Delaunay. MM. Cabanel and Humbert had the surfaces of the two transverse walls to the left of the cupola, along with M. Paul Baudry, the decorator of the Grand Opera House. MM. Levy, Blanc, and Maillot, were entrusted with the right arm of the cross. Lastly, the longitudinal arm, containing the high altar, was entrusted to MM. Meissonnier and J. P. Laurens. M. Hébert, as an artist brought up in Italian traditions, was commissioned to make the cartoons for the mosaic to be executed in the bay occupied by the high altar, in accordance with the traditions of the Byzantine school, and of the Basilicas of Ravenna and of S. Paolo Fuori le Mura.

Each of these artists, in the course of his career, had given proofs of his leaning towards monumental art. M. Puvis de Chavannes, whose appointment was most contested by the realist school, as well as by the Classicists (a rather singular fate), was, nevertheless, the one who was most in the secret of architectural *convenances*, and who knew how, abstracting himself from mere detail, to produce the most harmonious effect as a whole. The intervention of M. Meissonnier, who paints ordinarily in thoroughly Liliputian proportions, was very little expected in a company among whom

* Concluded from our last number, p. 507, *ante*.

special faculties for painting on a large scale were specially looked for. But it is no secret that the painter of "La Campagne en France," and of "1808," had dreamed for a long time back of an opportunity of showing that the talent of an artist is independent of the size of the surface on which it is displayed. The acceptance of such a work, if out of the line of his usual practice, was the result of an enthusiasm which is part of his very nature; perhaps also of the earnest solicitations of the "Directeur des Beaux-Arts."

What a singular spectacle, in truth, and what an astonishment for posterity, if it had had the opportunity of contrasting with the minute and microscopic productions of M. Meissonnier, the great walls on the Pantheon covered with giants created by the same pencil. But time has passed, and M. Meissonnier, engaged on numerous works, solicited on all sides, pressed by the demands of life, and already touched by the advance of age, has left the walls so far untouched, and it is pretty certain that those who will succeed us will have neither the surprise of contrast which the Directeur des Beaux-Arts wished to realise, nor proof of the efforts of which the artist believed himself capable. The other names which we have cited have their *raison d'être*. M. Alexandre Cabanel made his *début* more than thirty years ago, in paintings of heroic scale. At the Pantheon, with a conscientious punctuality which is rare among artists of any country, he executed with business-like rapidity the "Episodes in the Life of St. Louis." M. J. P. Laurens had for his subject "The Life and Death of Ste. Geneviève." He brought to the task his dramatic talent, his vigorous scale of colour, his conscientious research in archæology, and a certain unity and spontaneity of style which seems to put out of question all idea of concession to circumstances. M. Levy, a young painter who has, year after year in our exhibitions, grappled with large surfaces, represented the incidents of the "Life of the Emperor Charlemagne"; and when people stand before his painting, there rise to the lips the names of Subleyras, Jouvenet, and other French painters of the seventeenth and eighteenth centuries. M. Blanc had been commissioned to recall the drama of "Attila," and "Clovis at the Battle of Tolbiac." Earnestly pre-occupied with the relation of architecture to decorative painting, he made it his object to produce *silhouettes* of a monumental character; and, the better to mark the epoch of his subject, in the frieze above the horizontal band before named, where most of the artists employed have introduced a procession of personages somewhat in Pan-Athenaic taste, he collected the portraits of most of the remarkable men of the political and social France of the period. M. Maillot, who was to represent, in the rear of the altar where the relics of St. Geneviève are laid, the part which the worship of that saint had played in the city of Paris in the Middle Ages, considered himself bound to look back to that time; and, studying in manuscripts, in frescos, in miniatures, in the sculptures of cathedrals and their beautiful gilt and painted reredoses, the costumes, monuments, and manner of the epoch, he restored the epoch itself, and executed his compositions *à la cire*, in a distinctly archaic style. When these works shall have received the toning of time, they will, perhaps, be attributed, at first sight, to a date four centuries previous to that of their actual execution. M. Paul Baudry, the brilliant decorator of the foyer of the Opera House, drawn away from this work by the task of decorating the Château of Chantilly, has as yet executed nothing. M. Delauny, MM. Bonnat and Gallaud have their works still in their studios, though in a very advanced stage; and, at the time of writing this, M. Humbert, the youngest of the party, is still waited for and has not fulfilled his task.

I hasten to quit these mere enumerations, which may be fatiguing to the reader, more especially since they are not supported by any representation of the compositions of which I am speaking. The most interesting point is in regard to the relation of each painter's work to the rest, and of the whole to the architecture. The proper medium for such works should evidently have been fresco; but when we consider that our French artists are by no means familiar with this method, and that it is not very compatible with our climate and with our cold churches, it is easy to understand why this idea was abandoned, and it was determined to paint the works as easel pictures, and then attach them to the walls. There is one important point to be borne in mind in connexion with this part of the subject,—oil-painting induces a manner less broad; it is, on general admission, less monumental than fresco, and in total effect it must always lose something from the point of view of unity, for the painting is not so incorporated with the architecture. How is one to connect such paintings with the sober ornamentation of the edifice, and how can one pass without violence from the bare and cold walls to the brilliant vivacity of costumes charged with gold and precious stones, and to the brilliant lighting of the scenes represented?

One of the artists whom I have named, M. Galland, classed among "decorators," and whose speciality, till now, consisted in painting architectural devices, fruits, flowers, and monumental figures (one of the few French artists of the day who has put into practice that fruitful principle of the Renaissance period which wills that an artist should practise all arts simultaneously), was charged with the design of the borders which should unite the paintings with the architecture. He contrived a kind of frieze design, of intermediate type, of medium colouring, obtained by a mingling of gold with grey tones, consisting of wreaths and other decorative elements which achieved the transition, enclosing the compositions as in a border of tapestry. It has been observed that the broad surfaces to be decorated were divided by the engaged half-columns playing the part of pilasters. It was decided to leave the shafts of these half-columns their natural colour, and not to interrupt the three portions of the composition which were cut by these shafts exactly as the lead-lines of a stained-glass window cut through a figure. This was to leave to the architecture its natural *rôle*, giving at the same time to the painting the conventional character necessary to every composition executed for the decoration of an architectural monument with which it must connect itself.

The spectacle which is presented to the eyes and the mind by such a monument, finished, complete in itself, and which all the arts have united to decorate, may in many ways be compared to the effect of a grand musical composition in which all the instruments and voices have each their own part suited to themselves, but for that very reason contributing so much the better to the effect of the whole. It is rare, at any time and in any country, to find that each of the artists whose aid is called in by the architect (*the chef d'orchestre* whose mission it is to conduct the whole) has that perfect sentiment of discipline from which alone a harmonious whole can result. In the Pantheon, this stumbling block was more difficult to avoid than in any other edifice; for by the special disposition of the plan in the Greek cross form, the eye would take in, in quick succession, the two arms of the cross, and contrast the one with the other. It is easy to understand the risk of entrusting the wall on the right face to a colourist, and letting him have the full bent of his genius, and that of the left face to one who was more especially a draughtsman who would look for his effects in harmony of lines and in tone of retiring half-tints. One can hardly imagine, in short, Ingres and Delacroix summoned to figure face to face with one another in such a decorative scheme. Without saying that the contrast is quite so striking at the Pantheon as in the two cases we have supposed, one can see nevertheless M. Bonnat, whose tones are sombre, and whose shadows are deepened almost to blackness, representing a "Supplice de Saint-Denis," which takes place in an interior, face to face with M. Galland who paints the "Prédication de St. Jean" under the luminous sky of Palestine. Yet for all that, one can hardly expect of artists who have already won renown (and who keep it by the very force of their temperament) that they should renounce their special gift to bend to the sober scale of the one who is least of a colourist among them. M. Puvis de Chavannes, for example, without troubling himself about the colour-scale of his next neighbour, has struck his habitual note, harmonious, sweet, and pale; and his paintings remind one of faded tapestries, gently and harmoniously discoloured by the hand of time.

The art of mosaic, born in antiquity in a sun-lit land, practised later and with brilliant success by the Byzantine artists, and of which the finest examples are still those of Ravenna and of the old Basilicas, has become in our time, for the Western nations, a decorative element which they endeavour to acclimatise among themselves. In a vast *ensemble* such as that of the Pantheon, we must endeavour to make an application of it, and to give to our artists and French school of mosaicists the occasion to show how far they have assimilated the methods of the Italians, which have been looked to as their guides. M. Hébert, Director of the "Académie de France" at Rome, drawing his inspiration from the archaic compositions of the tenth century,—in regard to the necessary convention of form and contours, more bounded even than those of fresco,—must, nevertheless, remain *modern*, under pain of being in violent contrast with the painters charged with the decoration of the wall-surfaces surrounding the high altar. The difficulty may be said to have been surmounted; but one soon feels the necessity of uniting to the brighter surfaces which surround them the brilliant gold and the vitrified ground of the mosaic; and in this effort to apply coloured decoration to a building of which, till recently, the colourless stone was its only ornament, the artist who has conceived it and the architect who has to realise it, have been carried off their feet. It must evidently have been so; all those who have attempted to apply polychromatic decoration to a monument hitherto only adorned by its plain stone surface, know the fate that awaits them. They have not escaped it at the Pantheon. Little by little each day has done something more in adding a new decoration, resulting from the principal decorative scheme, with the risk of finding that, in place of having embellished the monument at the cost of the greatest sacrifices, one has compromised for ever the solemn grandeur and perfect harmony of the building. The mosaic executed in the neighbourhood of the high altar naturally called for a coloured frieze in the entablature; in its turn, this will demand painted fillets on the pilasters; and at this moment, in order that the colourless surfaces remaining may not cause a kind of hole (*un trou*) in the whole work, they have got to the point of ordering, from the manufactory of Gobelins, tapestries which will serve, so to speak, as a binding colour, a passage and transition between the cold surfaces of the columns, plinths, and surbases, and the surfaces covered by the artists; as one sees in the choir of the Cathedral of Cologne and of the churches of Nuremberg, and the majority of those churches of the Middle Ages which still retain their original decorative furnishing. That done, it has naturally followed that the leading sculptors of the French school,—the Chapus, Falguières, Merciers, Dubois, &c.,—have been called upon, and groups in marble have been placed here and there of a tone warmer than the stone, which assist still further the transition between that and the coloured surfaces. And thus it is that the Pantheon is becoming, from day to day, a museum of contemporary art which will give the precise measure of what the French school can do, in the way of monumental decoration, at this latter end of the nineteenth century.

Obituary.—Mrs. Palmer, of the firm of M. A. Palmer & Co., builders, of 7, Old Gravel-lane, St. George's East, died on Good Friday, at the age of 74 years, of an attack of apoplexy. Mrs. Palmer was one of the oldest inhabitants of St. George's, had been all her life in the parish, and for more than fifty years in the premises in Old Gravel-lane.

THE METROPOLITAN BOARD AND BILLS IN PARLIAMENT.

THE Metropolitan Board of Works has presented petitions against several schemes before Parliament in the present session. Among others the Board has petitioned against the Columbia Market and Railways Bill, on the ground of the insufficient widths of the bridges over Hackney-road and Harwar-street, and that it is proposed to stop up and appropriate the site of certain streets without paying compensation. The petition against the Great Eastern Railway (General Powers) Bill, by which the company seek to obtain powers to widen their main line on the south side between Upper North-street, Bethnal Green, and Devonshire-street, Mile End Old Town, near the Globe-road Station, prays that provision be made for securing in every case an adequate span and headway for bridges over the public streets, for preventing any projections beyond the general line of frontage, for regulating the design of bridges, and providing that any bridge or arch over the public way should be made water-tight and sound-proof, and that any street or way bridged or arched over should be lighted at the expense of the company.

In the case of the Greenwich and Millwall Subway Bill, which proposes to extend the time for the completion of the works and to give compulsory powers for the purchase of land for the purpose of forming a subway under the river Thames between Poplar and Greenwich, the petition alleges that the inhabitants of the metropolis will be injuriously affected if such extension of time, &c., as is contemplated is authorised by Parliament, that the company is and has been entirely unable to obtain the necessary capital for carrying out the work, but that if the powers of the company are extended they will be made the basis of a claim against the Metropolitan Board for compensation in the event of the Board obtaining powers for establishing improved means of communication across the river.

The King's-cross, Charing-cross, and Waterloo Subway,—which, although described as a subway, is in reality a railway,—is petitioned against, the petitioners submitting that the construction of the proposed subway will involve grave inconvenience and damage which will far outweigh any public advantage which it may afford. It will interfere with the Northumberland-street sewer, the Middle Level sewer (Main Line and Piccadilly Branch), the Essex-street sewer (Main Line), the Fleet sewer, and the Victoria Embankment and Low-level sewer, and derange the present metropolitan system of drainage. It is alleged on the part of the Board that the construction of the subway will probably entirely prevent, and will certainly render more difficult and costly, necessary or desirable extensions and improvements of the Main Drainage system. It is further submitted that the powers sought to be acquired by the Bill with regard to the subsoil of the streets should not be conferred upon a company, but that such subsoil should be reserved for the various purposes for which it may be required by public authorities.

The London and Blackwall Railway Bill, for widening the railway of this company on the north side, between Little Prescott-street, Whitechapel, and Bower-street, Stepney, and on the south side between the last-named street and Stepney Junction Station, is petitioned against on the general ground of the interference that would be occasioned to the Board's sewers, and the inadequate means of control provided by the Bill with regard to bridges and arches over the public way.

The London and South-Western Railways (Various Powers) Bill is opposed on similar grounds to the preceding Bill.

The London Central Subway Bill, by which power is sought to construct a railway from Liverpool-street to Charing Cross, is opposed by the Board on similar grounds to those set out in the petition against the King's-cross, Charing-cross, and Waterloo Subways Bill.

The Bill to extend the time for the purchase of lands and for the completion of the market at Shadwell, authorised by the London Riverside Fish Market Act, 1882, will be opposed by the Board. The powers conferred by the Act of 1882 will expire on the 24th of July in this year, and the time for the completion of the works will expire on the 24th of July, 1887. It is proposed by the Bill to extend the time for the purchase of land for three years, and for the completion of the works for five years, from the time limited by the Act of 1882. The fifty-fifth section of the Act exempts the streets and buildings belonging to the company from the operation of the Local Management Act and the Metropolitan Building Act, and any by-laws or regulations made in pursuance of such Acts. The petition against the Bill alleges that the effect of the section in question will apparently be to exempt the company from the whole of the municipal legislation affecting the metropolis, and that the law with regard to sewerage, drainage, street cleansing, repair and maintenance, the prohibition of buildings constructed of improper materials, the removal of dangerous structures, the levying of local rates, the regulation of the construction of streets, and the various other matters dealt with by the above Acts, would be abrogated so far as the company's property is concerned.

The Bill promoted by the London, Tilbury, and Southend Railway Company recites in the preamble that the company have entered into an agreement for the purchase of the disused burial-ground of a community known as the Seventh Day Baptists in Mill-yard, Whitechapel, and that by reason of the Disused Burial Grounds Act, 1884, the company are prevented from dealing with the land in question, and they seek to be exempted from the provisions of the Act. This Bill is opposed by the Board, on the ground that it is contrary to public policy and Parliamentary precedent that the provisions of a public Act with reference to burial-grounds should be set aside in the manner proposed by the Bill.

The Metropolitan Railway (Various Powers) Bill is opposed by the Board. This company propose to acquire for the purpose of their undertaking an area of nearly two acres of land in the parish of Clerkenwell, on both sides of the railway between King's-cross Station and the Metropolitan Meat Market. This is objected to on the ground that the acquisition of such a large area of ground may lead to considerable crowding and obstruction of the streets in the neighbourhood. It is further submitted by the petitioners that if it should be considered desirable for the company to acquire the land in question the company should be required to widen that portion of King's-cross-road extending westward from its junction with Baker-street, and also to widen and improve the end of Granville-place leading into Granville-square. A portion of an open space forming part of Whitechapel-road is proposed to be taken by the company, and the petitioners suggest that if the company be empowered to acquire this land it should be left open for the use of the public.

The London and North-Western Railway Company propose to lay a single line of rails across Worship-street, Finsbury, for the accommodation of their goods traffic. This is objected to by the Board as being inconvenient and dangerous to the public. The company further propose to acquire the premises known as the Spread Eagle, Piccadilly-circus, for the purpose of their undertaking. The Board by their petition allege that they are advised that if the company are authorised to acquire these premises by their Bill, any building erected upon the site would be exempt from the first part of the Metropolitan Building Act, and they submit that the purposes for which the premises are to be used should be more strictly defined, and that any building erected thereon should be subject to the Metropolitan Building Act.

The South-Eastern Railway Company by their Bill propose to extend the time limited by their Act of 1882 for the purchase of certain additional lands in the parishes of Deptford, Greenwich, St. Martin's-in-the-Fields, and St. Olave's, Southwark. This Bill is opposed on the ground that the Board has purchased, at a large expense, the land and buildings necessary for the widening of Tooley-street, and that the widening has been completed, but that by reason of the neglect of the company to elect, as they are empowered to do, whether they will purchase the surplus lands, the Board are unable to sell or relet the ground fronting upon the new street. The petitioners further submit that no adequate obligation has been laid upon the company with regard to the rehousing of the labouring classes who will be displaced by the carrying out of the works authorised by the Bill.

The Westminster (Parliament-street, &c.) Improvements Bill contemplates the formation of a company for carrying out certain improvements in the neighbourhood of Parliament-street similar in character to those proposed in connexion with the Parks Railway of last session. The improvements suggested are the widening of Parliament-street between Charles-street and Great George-street to 120 ft., the widening of Charles-street between Parliament-street and Delahay-street to 50 ft., the widening of a portion of Delahay-street to 60 ft., and the formation of a new street, 50 ft. wide, between Parliament-street and Delahay-street. This Bill is opposed by the Board on the ground that the streets are inconveniently planned, and that the estimate of the cost is inadequate for the work. The petitioners further allege that the proposed alterations are of considerable importance, and that, however desirable such alterations may be, they should not be carried out except in a manner to be approved by the Board as the representatives of the ratepayers of the metropolis. Attention has been called to this matter in the House of Lords, as we have already noted (see p. 440, *ante*). The petitioners refer to the experience gained by the powers conferred by Parliament on the Westminster Improvement Commissioners for effecting a somewhat similar improvement, namely, the laying out of Victoria-street, Westminster. The existence of the powers so conferred, it is asserted, caused great public inconvenience, and ultimately involved the public authorities in considerable expense, and the petitioners are apprehensive of similar results in the present case. If the improvements are commenced and left incomplete, or are delayed, the Board are apprehensive that themselves or the Westminster District Board may be called upon to complete the works.

The Board in every petition against a Railway Bill require that provision should be made in the Bill prohibiting the company from placing any notice, placard, or advertisement on any work or building in sight of any street or public thoroughfare in the metropolis.

NOTES.

THE Parliamentary debate on the War Office site was reached on Thursday evening, the 9th, after all, but the vote carried merely amounted to a sum of 10,000*l.* for preliminary expenses. Mr. Beresford-Hope moved the reduction of the vote by 1,000*l.* in order to take the sense of the House in regard to a building which he rightly described as "sadly disappointing," regarded as a production of national art. It was "commonplace, and overloaded with ornament." Mr. Shaw-Lefevre lectured the House on the subject, stating that he had been mainly responsible for the progress of the matter so far,—a fact which may account in some degree for the unsatisfactory result obtained. Mr. Shaw-Lefevre's claims to pose as an architectural instructor to the House may be gauged by the fact that he compared the design with that of the Houses of Parliament, to the disadvantage of the latter, and suggested St. George's Hall, at Liverpool, as a parallel case of a fine design produced in a competition by an unknown man. Any one who can seriously make such comparisons shows himself entirely without perception of what constitutes greatness in architectural design. Both St. George's Hall

and the Houses of Parliament are emphatically works of *genius*,—marked by the force, originality, and unity of conception characteristic of genius. The new design for the War Offices is simply a draughtsman's design, put together from books and precedents. Mr. Hope's suggestion that the distribution of the rooms should be accepted, and the "carcass clothed with artistic features" is, we fear, one hardly possible to realise without absolutely throwing over the architects; and that, as we have said, would be a breach of faith. But it would be possible to associate with them an architect, say an able man of the modern French school, who would pull the whole design together and supervise the details. Mr. Hope's amendment was supported by 26 votes, as against 45 for the original motion,—a pretty fair support considering how indifferent the subject is to most members of the House. We do not regard the matter as settled yet; and we must caution members against accepting as their instructor in architecture the late First Commissioner of Works, who has made it evident that he has no qualification whatever for such a *rôle* except that furnished by his recent official position and by his apparently very abnormal self-confidence.

THE Joint Committee representing the Meteorological Office and the Meteorological Society appointed to take into consideration the question of "the decrease of water in springs, streams, and rivers," and also "the simultaneous rise of the flood level in cultivated countries," have elicited replies containing several series of observations made by various well-known authorities in this country. So far as the available records go, there does not appear to have been either any marked general decrease or increase of the water supply in England, though there have been isolated cases where either or both have been occasionally experienced. During a period of sixty-five years a deficiency of water has occurred in sixteen, at intervals varying from one to eleven years, while there has been an excess in seventeen years. The dry years seem to have occurred at somewhat quicker intervals, for five years out of the sixteen have occurred at seven, nine, ten, and eleven years' intervals, whereas there have been only two intervals of seven and eleven years respectively in the wet year. The causes of fluctuation or increase in the height of the flood levels of rivers depend so much on the characteristics and configuration of the respective basins that it is impossible to base any general conclusion from specific instances, but the fact of any absolute progressive *decrease* in the aggregate water-supply of a country generally is quite capable of determination. Such decrease, however, has not as yet seemingly taken place in England, though the inconvenience arising from local droughts has been often experienced, and will continue to be felt until measures are taken to store some of the superabundance in certain localities for the purpose of distributing it in times of deficiency to others, or permanently supplementing a defective supply.

THE character of the lines of communication between Russia and the Affghan frontier is a subject of paramount interest for the moment. The basis of any Russian movement may be placed at Michailovsky, on the south-eastern shore of the Caspian, to which spot access is given by the steam flotilla on that sea. From Michailovsky the Trans-Caspian Railway was completed, in September, 1881, to Kizil Arvat, a distance of 144 miles. Thence to Askabad, a distance of 135 miles, the route lies chiefly through desert, or rather deserted country. From Askabad to Sarakhs is 185·5 miles, and from Sarakhs to Herat 202·5 miles, making a total distance of 667 miles from the shore of the Caspian to Herat. The distance from that city to the mouth of the Bolan Pass is 400 miles, as the crow flies, but the road makes a circuit of 600 miles round the foot of the mountains and by the valley of the Helmund River. Between Sarakhs and Herat the road lies through the Robat Pass of the Borkhut Mountains, at an elevation of 3,100 ft. above the level of the sea, and about 900 ft. above the surrounding locality. Thus, from Michailovsky to Sibi is 1,266 miles, a distance through a difficult and deserted country for the most part, which nothing but a very tempting and definite object could induce a military expedition to encounter.

THE work of piecing together and arranging the shattered fragments of the Pergamene marbles is still energetically carried on at Berlin by the two sculptors, Frere and Possentis. Certain recent combinations have been made which lead Frere to think that the conjectural restoration of the great altar, published by authority, and now widely known, is fundamentally in error. He believes that the great stair-case which led up to the platform of the altar was not, as has been hitherto supposed, on the south, but on the north side. Further excavations will have to be carried out before his conjecture can be proved. Meanwhile, writers and teachers on the subject will do well to hold their doctrine on this point in reserve. Frere has further succeeded in putting together, out of fragments hitherto inexplicable, a very interesting group, in which one of the snakes,—in which so many of the giant figures terminate,—is engaged in battle with a monster somewhat like a crocodile. Probably this fight went on somewhere in the retinue of Poseidon, of whom no trace remains. Two colossal heads,—one of Trajan, the other of Hadrian,—are about to be set up in the Berlin Museum. They are reported to be of splendid execution, and are interesting as belonging to the class of acrolithic statues, *i.e.*, statues the trunk of which was of wood, with armour of bronze, while the extremities were of marble. The statues, reliefs, &c., from the Sabouroff collection, of which we spoke last year before they were shown to the public, are now exposed to view, with the exception of the beautiful Salamis bronze, which is being cleaned. In a paper recently read on the subject of this bronze, Dr. Furtwaengler came to the conclusion,—which, we think, no one will dispute,—that the Salamis bronze belonged to the beginning of the fourth century B.C., and was a work of the Argive bronze school. The long curls, of which slight remains are visible on the shoulders, make it probable that the statue represents Apollo. The statue is the only bronze of any size which we possess from the best period of bronze work. The Berlin *Philologische Wochenscrift* rightly observes that the acquisition of the Sabouroff grave-reliefs raises the Berlin Museum at once to a high rank as regards monuments of pure Attic work. Its fame no longer now rests on the Pergamene marbles only.

A CORRESPONDENT writes:—"On Thursday, April 2nd, another fine bronze statue was found at the new theatre on the Via Nazionale, Rome. It is in a much better state of preservation than that recently discovered; in fact, with the exception of flaws at the knees, it is perfect. The statue represents a boxer seated, and resting himself after the fatigues of the contest. The body is bent slightly forward, the legs are wide apart, whilst between them one hand rests upon the other, the thighs supporting the forearms. The head is turned towards the right shoulder, the open mouth seeming to draw in breath, replenishing the exhausted lungs, so the breasts are somewhat sunken. The thick, curly beard, moustaches, and hair denote strength, which is fully shown in the muscular body. The contest has evidently been severe: the hands are swollen, also the ears, neck, and nose, showing that, although he may be the victor, victory has not been achieved without leaving traces of a hard struggle. The *cestus* is bound round the hand and well up the forearm, ending in a fringe. It is very different from the simple strap, as represented in Canova's boxer in the Vatican, being loaded with a heavy piece of metal across the palm of the hand, thus adding weight to the blow. The statue was found within 4 in. of a wall of the Baths of Constantine, and was evidently buried when those baths were erected; and then narrowly escaped discovery. It was found seated on the fragment of a capital which fortunately held the figure together, and enabled the workmen to excavate it, and carry it to the Magazine. It is unique, and we should say the man represented is not a Greek. The height of the seated figure is 4 ft. 4 in."

ROME is just now fated to be fortunate. Near the Porta Salara a necropolis has been discovered, and already not only a number of ancient cippi, but also some sarcophagi, reputed to be of great beauty, have been dug out. These last are in excellent preservation, and still contain the dead men's bones. They are decorated with reliefs of considerable mythological interest. Among the designs are "The Rape of the Leukippidæ" and the "Nurture of Bacchus." It seems that there is some doubt as to whom the spoils belong to, and they are kept, as is usual with discoveries in Rome, as strictly invisible as possible. This habit of being mysterious about discoveries is based on the very commonplace desire to raise the money value in case of a sale, aggravated by the wearisome officialism which always waits upon ignorance.

DURING recent weeks some ordinary works of repair have been in progress in that portion of the crypt of Canterbury Cathedral known as the French Protestant Church. These works required the removal of a portion of the floor, and certain excavations were made. The workmen speedily came upon a large number of fragments of elaborately carved and moulded stonework. They were carefully removed to the office of the Cathedral Architect, Mr. Austin, where they remain, for the most part, for safe custody. They consist, without a doubt, of portions of a very elaborate monument or shrine, being very finely wrought, and coloured blue, vermilion, and gold. The style is that of the middle of the fourteenth century. The fragments are so broken that few of them join, and no portion is of large size. From the repetition of the parts it is possible to recover the design, and to show the nature of the monument to which they belonged. Many of the fragments are portions of delicately-carved canopy-work, indicating that there were many small niches to have such ornamental terminations. Among the fragments was a very small piece of a sculptured robe, evidently a portion of an ecclesiastical figure of life-size, and a single pearl remains embedded, as one of the ornaments of the robe, in the surface of the stone.

ON inspection of the cathedral it is found that several of the fragments of shafts agree in character with the remains known to be those of the shrine of St. Dunstan, on the south side of the choir, just to the east of Archbishop Sudbury's monument. There are here traces of a small projecting structure of which three moulded columns remain embedded in the wall. The return mouldings of the plinths are also visible, and since there are, as well, the marks where the arches and tabernacle work above the columns sprang from, it would be no difficult task to recover the design. The length is marked by the fragments in position, as is also the height. The details of some delicate diaper work agree exactly with what has just been found. Traces of very good wall decoration in colour remain between the pilasters referred to, and these indications have additional interest from the discovery now made. The position of the shrine of St. Dunstan is given in the register of Prior Henry, now in the British Museum, printed in Dart's History of the Cathedral. It is expressly stated that his body was in "feretio suo juxta magnum altare versus austrum." The shrine was doubtless demolished at the Reformation, when many other of the wonders of the cathedral were removed. There were here pieces of Aaron's rod, of the clay out of which Adam was made, and several other such "curiosities," as they are called by Professor Willis. Some of the fragments found may prove to relate to some one or another of the shrines removed in the sixteenth century.

A REMARKABLY clear summary of the working of fifteen of the principal railways in the United Kingdom has been prepared by Messrs. Hollebone and Trench, which deserves the attentive study of all railway shareholders. During the six months ending with last December, the falling-off in the merchandise and mineral receipts of these lines amounted to 598,899*l.*,—a sum which the increase of passenger and other receipts reduced to 472,701*l.* The corresponding decrease in working expenses was only 50,791*l.* But the operation of the Cheap Trains Act, 1883, reduced the Government duty, to the advantage of the railway companies, by 136,849*l.* To the net decrease in revenue thus arrived at, which is 285,061*l.*, have to be added the charges on new capital, amounting in all to 245,018*l.* On the Metropolitan line the prior charges on capital have decreased by 18,561*l.*; and on the North-Eastern by 3,746*l.* During the half-year on the London and North-Western the increase under this head has been as much as 62,728*l.*; the dividends paid by this great line having fallen off by 89,202*l.* The Great Eastern, with an increase in gross revenue of 25,287*l.*, accompanied by a decrease of 11,653*l.* in working expenses (including saving of duty), has paid 28,883*l.* more in dividend, as well as 14,674*l.* for charges on new capital, in the year. But this is a solitary case. Four lines have managed not to reduce their dividends, but the balance of the falling off in the net revenue of the lines compared has been 285,061*l.* And thus a further capital, bearing interest to the amount of 245,000*l.*, has been expended to earn a diminished gross revenue. The deduction from dividends on the ordinary stock of nine of the companies cited is thus as much as 524,754*l.*,—a loss, if not recouped, equal to a depreciation of more than ten millions sterling in the capital value of these lines.

FORTY-FIVE pounds is not a large sum as consolation for a whole family suffering from typhoid fever, and a son being compelled to take a voyage to Australia in consequence. But these were the damages which were awarded Mrs. Chichester by a jury in an action against her landlord for not putting the drains in order. It appeared in this case of Chichester *v.* Lance, which was tried before Mr. Justice Wills and a special jury, on the 14th instant, that the landlord of the house had undertaken to put the drains in order. We must assume from the case that he did not properly comply with his undertaking, and he has had to pay damages and costs. It will perhaps be a lesson that Baptist Ministers from Wales, for such was the defendant, should not purchase houses in London and then let them, unless they are fully alive to all the responsibilities of their lay as well as their clerical position. It must further be observed in this case that the landlord had agreed to put the drains in order. The tenant, therefore, showed more foresight than many of the class in making such an agreement, and considerable courage in seeking for her remedy in the Law Courts.

THE Superintending Architect of the Metropolitan Board of Works, having regard to the views expressed in the late cases of Spackman *v.* The Plumstead Board of Works and The Vestry of St. Marylebone *v.* Rose, has decided to remodel his certificate as to lines of frontage under section 75 of 25 and 26 Vic., c. 102, as the one now issued does not meet the present state of circumstances.

WE understand that the Buccleuch Memorial Committee have given up their first idea of an equestrian statue, and have commissioned Dr. Rowand Anderson to prepare a design of more architectural character. This, as embodied in the architect's first sketch, consists of a lofty pedestal having three stages of relievos in bronze, twelve in all, illustrating incidents in the history of the Buccleuch family. A statue of the Duke, in his robes as a peer, surmounts the pedestal. Besides the relievos there are small detached figures at the angles and heraldic and other emblems. It has been proposed to give the subsidiary decorations to resident sculptors, and to entrust the statue of the Duke to Mr. Boehm; but nothing is settled as yet.

FROM some correspondence which has reached us it appears that something not very "straight" is going on about the competition for the Newcastle-under-Lyme public buildings. The Assessor, Mr. Lockwood, of Chester, chose, we are told, three designs, signed "For England, Home, and Beauty," "Mind and Body," and "Bonâ Fide," for the first, second, and third premiums respectively. Then it is announced in the local papers that, though the award has been confirmed by the Council, four other designs are to be taken into consideration for possible execution. This, if true, is simply making the competition a farce. If the first premiated design is not the best for the purpose, it should not have been premiated; if it is, it should be accepted for execution.

UNDER the title of the "Common-sense Drying Apparatus" we have before us the particulars of a patented system of drying timber and other things, which seems to us as perfect a one as can be needed or desired, and, beyond the first outlay, a cheap one. The apparatus used by the company who have introduced this excellent system, of which Mr. L. R. Fuller is the patentee, can be fixed to an existing drying-room for the purpose of seasoning all kinds of timber, cut or uncut. The room used requires to be fitted up specially to render the walls non-absorbent, and steam pipes are laid over the floor for warming the air. The timber is first "sweated" by sprays of steam, which dissolve the sap; the air laden with the moisture is extracted by a fan worked by steam and taken to a condenser kept at a low temperature; here the moisture condenses and the air, now dry, is returned to the drying-chamber to be again used to take away more moisture to the condenser, and this process it repeats until the timber is "seasoned." This is simple and we should say most effectual and speedy. The machinery is of American production, but an agency for it has been established in London. The Americans seem to be getting well ahead of us in matters of this kind.

THE subject of cremation is to be dealt with on Thursday, the 23rd, in a lecture at the Parkes Museum by Sir Spencer Wells. It is known that this eminent surgeon has given his strong support to cremation as the system of the future; and whatever may be the difference of opinion among scientific men on the subject (differences arising out of mere sentiment need hardly be taken account of,—they could only have a temporary effect), the systematic exposition of it by so high a medical authority cannot fail to be of great interest.

SCHOOL BOARDS AND ARCHITECTS.

To the layman it seems very unjust that when a corporation has obtained the benefit of work, it should evade the responsibility of paying for it on the ground that the contract under which it was executed was not under seal. But, as our readers are aware, such is in many cases the law, as we have endeavoured from time to time to show, especially in reference to the latest of the decisions which have thus laid down the law, namely, Young & Co. *v.* The Mayor of Royal Leamington Spa. In delivering judgment in that case, Lord Justice Lindley pointed out that though it was perfectly clear that by the provisions of the Public Health Act, 1875, every contract exceeding 50*l.* must be under the seal of the urban authority, yet that the general law on the subject was somewhat in a doubtful state. We endeavoured, in a paper on "Contracts of Corporations,"* to explain what that state was; and now there comes another decision which,—at any rate, so long as it is not reversed on appeal,—settles the law as regards work done for a School Board. The case is the more important to our readers, because it settles without doubt,—if it settles nothing else,—that an architect at any rate has a right to recover against a School Board for work done, though the contract under which he has done the work is not under seal.

* See *Builder*, Aug. 12, 1882.

We refer to the decision of Mr. Justice Mathew, given after taking time for consideration, in the case of Scott *v.* The Clifton School Board, Law Reports, 14 Queen's Bench Division, p. 500 (April number). The work done was that which belongs to the usual business of an architect, namely, preparing plans for buildings,—in this case, schools,—and for superintending their erection. The orders under which Mr. Scott acted were agreed to by resolution of this particular Board, and were recorded in the minutes of their proceedings; they were not, however, sealed with the seal of the Board. When work has been done, and it is evident that a person is entitled to some remuneration, the law must be very clear to enable a judge to decide against such a claim. There is, however, in the Elementary Education Act, no provision, in so many words, that a contract must necessarily be under seal. But in that statute is to be found a section which states that "any minute, if signed by the chairman, shall be receivable in evidence in all legal proceedings without further proof." Mr. Justice Mathew, having regard to this section, and to the cases which have decided that some corporations are sometimes liable, so to speak, gave the go-by to the cases on the other side, and held that it was unnecessary that the order should be under seal, and that, having done the work, the architect was entitled to be paid for it.

But on a second ground the Judge held the Board liable, and this is, perhaps, even of greater importance than the other part of the case. The 35th section of the Elementary Education Act states that a School Board may appoint a clerk, and a treasurer, and other necessary officers. A part of the third schedule says, "the appointment of any officer of the Board may be made by a minute of the Board, signed by the chairman and countersigned by the clerk (if any) of the Board, and any appointment so made shall be as valid as if it were made under the seal of the Board." Mr. Scott was appointed architect to the Board in the manner stated in the Act as above, and the subsequent orders were communicated in like manner by the clerk. The Judge, on this part of the case, held that Mr. Scott had been duly appointed architect to the Board, not for the temporary purpose of planning and looking after the erection of the schools in question, but as a permanent official. It was contended on behalf of the Board that an architect was not such a person as was contemplated by the statute; but, said Mr. Justice Mathew, "although after the erection of the schools his duties might not be onerous, there is no reason to suppose that it was intended that he should not continue to act whenever his services were necessary. Further, the regulation is intended to be one of general application, and in large towns where there are many schools there may well be the necessity for the appointment of an architect as a permanent official of the Board."

The application of this case is therefore clearly two-edged; on the one hand, it decides that those doing work for a School Board which is essential to their business as such a Board, are entitled to be paid for the work so done. In this sense the case seems to apply as much to a builder as to an architect. On the other hand, it settles that a person appointed by minute in regular form architect to a School Board, even though the primary object of his appointment be that he shall perform a temporary duty, is a permanent official of the Board, and so is entitled to be paid for his work till his appointment is cancelled.

Association of Municipal and Sanitary Engineers and Surveyors.—A Lancashire and Cheshire District Meeting will be held at Burnley, on Saturday next, April 25th. The members will assemble in the Council Chamber, Elizabeth-street, at half-past eleven a.m. Mr. J. E. Stafford, A.M.I.C.E., the Borough Surveyor, will give a short sketch on subjects of local and of professional interest, and will show and explain the plans of the intended new waterworks, municipal buildings, and hospital. At one p.m. the members will proceed to the Store Yard of the Corporation and inspect the "Refuse Destructor," "Elevator," and "Tool Sharpener," and afterwards to the new public Abattoirs, River Invert and Gasworks Walls, Danes House, Canal and Railway Bridges, Scott's Sewage Works, and, if time will allow, the Bank Hall Colliery.

AGRICULTURAL RESOURCES OF INDIA.

It was not till a rapid succession of famines within the last quarter of a century had brought home to the Government of India the fact that there was almost a total absence of agricultural statistics that any attempt was made to organise a systematic collection of data, agricultural and meteorological, whereby some idea might be formed of the possible annual out-turn of the food crops of the country during the respective seasons. After the last great famine the Home Government despatched Sir James Caird on a mission of inquiry, and, subsequently, special commissioners were appointed, who, in their turn, submitted a very able and exhaustive report, in which, amongst other suggestions, was recommended the formation of a distinct Agricultural Department on whom should devolve the collection of all the information possible regarding the commercial and economic products of India, with a view to their embodiment in periodical reports. At the head of the new department was placed Mr. Buck, a distinguished member of the Indian Civil Service in the North-West Provinces, who has recently given an interesting lecture on the subject before the Society of Arts, under the presidency of Sir J. Caird. As England has so great an interest in all that concerns the economic productions of India, and only a few persons had the opportunity of hearing Mr. Buck's lecture, a brief notice of it will, doubtless, be acceptable to many readers of the *Builder*.

Perhaps one of the points least capable of being correctly apprehended by persons not conversant with India is its enormous size. This Mr. Buck very happily illustrated by comparing it with Egypt,—a country very similar in many respects, but with only one-fiftieth of its capacity in every particular. India, though so large in itself, is, after all, but a shred of the vast Asiatic continent, but yet the most valuable portion of it, owing to the fact of its possessing a treasure in its rainfall. This treasure, however, is not by any means equally distributed, and hence arise the great uncertainties in agricultural operations and the extreme oscillations to which the food outturn is exposed. The problem which has been exercising the Government of India for many years is how those oscillations may be mitigated, if not altogether obviated. Before describing the measures which have been undertaken, Mr. Buck gives a short description of Indian cultivators, and of the prevailing system of agriculture. The former he pronounces to be "the most patient, hard-working, and, in many cases, skilful agriculturists that can be found on the face of the earth. Inured to privation, accustomed to maintaining life on short meals, and with scanty clothing, they give their labour for the smallest return it is possible to conceive. The consequence is that, broadly speaking, the agriculture of the country is carried on by a vast human machine,—a machine of flesh and blood, which is cheaper in its working than it is possible for any machine of steam and iron to be"; and hence he concludes that, until wages have risen to a much higher standard, the question of increasing the products of India by the application of machinery must be considered a secondary one.

The system of agriculture he describes as that of *petite culture*, the country being split up into many millions of five-acre farms. It is to the maintenance of the holders of these farms in a normal condition of health and strength, rather than to the supplying a starving population with food in a time of famine, and to the adoption of measures to increase the produce of the country rather than to the distribution of the existing supplies in a time of scarcity,—in other words, the policy of maintaining agricultural operations at the highest attainable standard of efficiency, that the recommendations of the Famine Commissioners pointed.

Mr. Buck then proceeds to enumerate the measures necessary to secure that end, and, strange to say, he gives the place of precedence to the promotion of railways; that is to say, to the mode of carriage rather than to the means of increasing production, apparently in contradiction to the principle he just previously stated to be essential. He is quite correct when he goes on to say that "railways with few exceptions tend to ameliorate the condition of the cultivator mainly in two ways,—first, by insuring a better average price for his produce when he has a surplus for export; and secondly, by bringing him food at a cheaper price when he has insufficient for subsistence." It is easily conceivable that there may be tracts blessed with a superabundance of food over and above the requirements of its inhabitants, and that the construction of a cheap means of communication between it and another tract where there is a redundancy of population with a deficiency of food may be the best and readiest method of supplying the wants of the latter; but on the principle, rightly advocated by Mr. Buck at the close of his lecture, that in legislating for the wants of India it is necessary to do so for it as a whole, and not for fractional portions of it only, surely the most obvious measures, when the well-being of the whole empire has to be considered, should be such as will not only secure from fluctuation its food supply, but will increase its out-turn. If so, the measure of *first* importance would rather be a reliable system of irrigation, and the next, the means of insuring its distribution. Perhaps it would be a truer economic principle that the two measures should proceed simultaneously, for to increase the outturn from the soil without providing the means for its subsequent distribution would be a doubtful benefit even to the locality immediately concerned, but to provide increased facilities for the conveyance of food which was not to be forthcoming in the hour of need would be productive of good to no one. There is, however, another consideration which does not seem to have occurred to any of those who have hitherto been engaged in these discussions, and that is, while the construction of lines of intercommunication is useful, nay essential, for the easy distribution of the existing food supplies of the country, its economic advantages are confined to transferring capital from one portion of the empire to another, and therefore it does not in any way tend to develope or increase its actual wealth. On the other hand, the construction of a class of works which tend to double the out-turn of agricultural and economic products, coupled with lines of communication for its conveyance to the markets of the world, directly leads to an increase of commercial transactions, and either by an interchange of commodities, or by actual specie payments introduces fresh and foreign capital into the country generally, and so conduces positively and tangibly to an increase in its resources and wealth. Hence there must be considerable reserve in assenting to Mr. Buck's conclusion that "the expenditure of capital on railways affords a quicker benefit to a greater number than irrigation or any other measure Government can undertake, and rightly heads the list" of remedial measures.

His remarks on canal and well irrigation are much to the purpose, as also his disposal of the objections which have occasionally been raised as to the evils resulting from irrigation. Those not conversant with the subject understand the term "irrigation" in India to be limited to the mere act of covering the land with water; whereas a proper system of irrigation combines drainage, with protection from floods where necessary, and water carriage where possible. Of this last point, it is to be regretted that Mr. Buck has made no mention. Advocating expenditure on railways with a view to facilitate and cheapen carriage, not only has he omitted to suggest any improvements to the waterways, but has not even made the slightest allusion to them, and yet if any country in the world stands in need of the cheapest of all methods of transit, it is India. A strange oversight on the part of the head of the Agricultural Department, with whom it might be supposed the extension of the wheat trade between India and England would of itself be of sufficient importance to suggest an inquiry into the reasons why that trade is still practically monopolised by America, when all that is needed for its permanent transfer to India is such a reduction in the cost of its conveyance to the ports for shipment as will admit of its being sold at a profit in London, even when prices are as low as at present.

Mr. Buck next advocates the reclamation of waste lands, estimated at 100 millions of acres, and the establishment of fuel and fodder reserves, the latter so necessary for the maintenance and improvement of the cattle which over the greater part of India are, as a rule, kept in very low condition. This measure is followed by that of emigration, on which there is a good deal to be said, judging from the very varying opinions expressed during the discussion which followed the lecture. Emigration to foreign countries of kindred climatic conditions, styled by Mr. Buck "Greater India," but where the rate of wages is three or four fold higher than in India, has much in its favour; but while there still remains so vast an area awaiting reclamation at home, it is open to question whether the better policy would not be to encourage a transfer of labour from where it is superabundant to home tracts where it is deficient.

The last measure treated is the improvement to be effected by new machines and new methods of culture. With very few exceptions, Mr. Buck thinks the time has not yet arrived when the introduction of agricultural machinery can be profitably utilised, not as respects a reluctance on the part of the cultivator to avail himself of it, as to the fact of which he has satisfied himself that his cattle are not sufficiently strong to work heavier appliances. The cultivator's readiness to use machines adapted to the power of his cattle has been already evidenced by his adoption of improved surgar-mills in parts of Bengal. Mr. Buck has a word to add on the favourite theme of many self-constituted Indian reformers, the indebtedness of the Indian cultivator, whose position, however, he considers to be not so bad as it has been represented; but, at the same time, he points out that the only way to keep him out of the hands of the money-lender is to eliminate, as far as possible, the uncertainty which now attends his harvests. While acknowledging that in some tracts the state of the Indian cultivator is "deplorable," he at the same time observes "that it is due not to the cruel treatment (as has often been so recklessly alleged) that he receives from his British rulers and their representatives, but from his mistress Nature and her capricious monsoons, against the tyranny of which every nerve is now being strained to protect him"; and he concludes with the gratifying assurance that though "much, very much, yet remains to be done, and though the work of protection is far from being accomplished, yet whatever pictures may be drawn of local distress in some parts of India, in the greater part of the empire, the condition of the cultivator is materially better than it was fifty years ago." The charts which Mr. Buck states are in course of preparation by the Indian Survey Department, and which will illustrate the industrial and agricultural resources of the empire, cannot fail to be of the highest interest, and will, doubtless, be attentively scanned by thousands of visitors at the forthcoming Exhibition in 1886.

COMPETITIONS.

New Vestry-hall for Chelsea.—The Vestry of Chelsea considered at their meeting on Tuesday night a long report by the Committee of Works as to the various designs submitted by competitors for the new Vestry-hall. Seven plans had been selected as best deserving consideration, and of those the committee, advised by Mr. Henry Hunt, who had been appointed the professional assessor, recommended that Nos. 26, 14, and 18 be the designs, the authors of which should receive premiums of 100, 50, and 30 guineas respectively. The committee's recommendations were adopted, and it was then agreed to reveal the names. The author of the first (No. 26) proved to be Mr. J. M. Brydon, F.R.I.B.A., of 5, Cambridge-place, Regent's Park; the author of No. 14 was Mr. William Leck, of 20, Moore-street, Chelsea; and Messrs. Newman & Newman, of Tooley-street, London Bridge, were the authors of No. 18. Mr. Brydon was then by formal motion appointed architect for the enlargement of the hall, the cost of which will be 15,000*l*.

New Church at Mosley Common, near Tyldesley.—Mr. F. H. Oldham, F.R.I.B.A., of John Dalton-street, Manchester, has been the successful architect in a recent competition for a new church at Mosley Common, near Tyldesley, which is to be proceeded with at once. Mr. T. Worthington, a vice-president of the Royal Institute of British Architects, was the assessor.

Peterborough Cathedral.—It is stated that the Archbishop of Canterbury has given his award in the Peterborough Cathedral controversy. He advises the appointment by the Dean and Chapter and Restoration Committee of an executive of seventeen to decide the question; failing which, his Grace recommends that the first plan of rebuilding the tower, as originally provided for, be adhered to.

Illustrations.

MONUMENT DESIGNED BY M. DALOU.

THE monument, of which we publish an illustration from a photograph of the sculptor's model, is designed for the decoration of the "Place de la Nation," and the municipal administration count upon solemnly inaugurating it on July 4th, 1886. Surrounded by sparkling fountains and masses of green verdure, it will occupy the centre of the vast central basin of that *Place* which for some years has been called "Place du Trône," and which is situated at the extremity of the Boulevard Voltaire.

The artist from whom the city of Paris has commissioned this great piece of work is well known in England, which, indeed, offered him a generous hospitality. It was there that he lived during long years, and there that his fine talent became fully developed and ripened. M. Jules Dalou was the favourite pupil of Carpeaux, whose nervous and expressive talent his own recalls. For him, as for his master, nature is no dried-up convention, cold and stiff, but a living and palpitating model, communicating to the marble or the bronze which reproduces it its own life and animation.

The model of M. Dalou's design figured in an open competition, in 1879, for the monument to the Republic inaugurated on the 4th of July, 1883, in which competition M. Charles Morice was the fortunate victor. M. Dalou gained nothing officially then, not even "honourable mention," though all the world of the public and the press agreed in considering his work as quite out of the common groove,—frankly original and thoroughly decorative in treatment.

The Academic clique, even more than the restricted conditions of the competition, operated in excluding this most remarkable design from success; but the Municipal Council of Paris did itself the honour to repair the wrong done by this unexpected judgment, in voting the acquisition of the group of M. Dalou at a price of 70,000 fr., and granting, for the cost of casting it in bronze, a further sum of 140,000 fr.

It was then that the material difficulties commenced. The artist, whom the political amnesty had recalled to France, arrived in Paris, but with no notion where he could commence to model his figures, some of which would be nearly five mètres in height. The Municipal Council, wishing still further to second his efforts, had an immense shed constructed in planks in the neighbourhood of the Champ de Mars, and it is in this hastily improvised *atelier*, with the wind blowing through the gaps of the boarding, and the rain coming through the skylights, that, since 1880, M. Dalou has been working without cessation at this group and at the completion, at the same time, of two other groups now well known: "Le Triomphe de la République," an alto-relief for the Hôtel de Ville; and "Mirabeau aux États Généraux," commissioned by the Chamber of Deputies.

We will endeavour to give what must at best prove but a dry description of the work, which, in spite of all kinds of difficulties, is proceeding step by step and carrying out more and more fully the promise of the original model.

On a car drawn by two lions and guided by the genius of Liberty brandishing a torch, the figure of the Republic stands upright, in an attitude of triumph, command, and protection. To right and left of her, on either side of the car, two other figures representing Labour and Justice are pushing onward the wheels; the first represented under the aspect of an *ouvrier*, with naked torso, mallet on his shoulder, sabots on his feet; the second under the aspect of a woman richly draped. Peace, carrying the symbols of Plenty, marches behind the car, scattering as she goes flowers and fruits. The child figures symbolising Instruction, Equity, Wealth, &c., contribute to the decorative effect of the whole composition.

This rich composition, full of movement, rests on a pedestal divided, by great reversed consoles adorned with acanthus foliage, into four faces decorated with attributes in relation with the general idea of the monument. The lateral figures, as well as the animals and children, are treated with great spirit and knowledge, finely modelled, with a great feeling for decorative effect. The garlands and the other decorative adjuncts have been modelled and executed by the sculptor himself, who is too rich in resources to have occasion to call in the assistance of specialists for those accessory details which sculptors generally leave to ornamentists.

It will be understood that the reproduction in bronze of such a work will be a long and difficult task, requiring the most minute care, especially as the artist has decided on employing for this work the system *à cire perdue*, in accordance with the traditions of the Renaissance, and which is so favourable to the perfect execution of work in bronze.

Thus, although the model of the principal figure, as well as that of the car, is already completed and cast, and the other models far advanced in clay, M. Dalou does not expect to be able to hand over his colossal group to the City of Paris before 1886. Our readers are already aware that the French Government has not chosen to wait for that inauguration to give to the energetic artist the recompense so well earned by him. The jury who selected the work for execution in 1883 have already given him the most liberal recompense, and a few days after the *Journal Officiel* enrolled among the names of the new "Chevaliers de la Légion d'Honneur" the name of the most brilliant representative of the younger school of French sculpture.

R. B. FENWICK.

*** The front view of the group we illustrated in the *Builder* of July 9, 1881, remarking at the time that the side view, which we now give, was even finer. We may eventually give a larger illustration of the completed work from the bronze; but we have thought it worth while to illustrate the original model of so remarkable a work, rather than wait for its completion.

LUBECK IN THE SIXTEENTH CENTURY.

THE panoramic view of Lübeck is a reproduction of an old German wood-engraving on a very large scale. It is an example of a type of work which was not uncommon in the early days of wood-engraving, when representations of towns in this manner were rather popular subjects, and among these were some of the largest engravings ever made. The present example is about 10 ft. or 12 ft. long. Messrs. Kell have succeeded very well in reducing it to manageable size without losing clearness of definition.

THE COLLÈGE STE. BARBE, PARIS.

WE give this week two views and a plan of the Preparatory School of the Collège Ste. Barbe, Paris. In the *Builder* of June 21st, 1884, we mentioned, in connexion with the last Congress of French Architects, the visit of the members to the Lycée Jeanson de Sailly. But, among the institutions of this nature, rather private than governmental, there is one which has always maintained a foremost rank among houses devoted to secondary classic education, and given to the State an admirable example to follow; that is, the Collège Ste. Barbe, situated in the Place du Panthéon, and directed by M. Dubief, member of the "Conseil Supérieur de l'Instruction Publique."

"Sainte-Barbe," as it is familiarly termed, comprises in its programme the whole circle of secondary education, from the elementary grammar classes carried on in its accessory establishment ("L'Internat de Fontenay-aux-Roses," or "Sainte-Barbe des Champs"), passing by intermediate classes to the rhetoric classes of the "Collège Ste. Barbe," in the Place du Panthéon (at once a boarding, semi-boarding, and day-school), and terminating in the advanced classes of literature and science with which the "École préparatoire" is more especially connected. This latter, in juxtaposition to the College, has its special entrance from Rue Valette, and, as its name indicates, is intended to receive, either as "externes" or "internes," the elder pupils who are preparing for Government schools, such as the École Normale, École Polytechnique, École St. Cyr, &c.

It is this "École préparatoire" which, having developed considerably of late years, has given rise to the construction of the new buildings in connexion with the Collège Ste. Barbe and grouped with it adjacent to the Bibliothèque Ste. Geneviève, and which deserve note for the arrangement of the plan, the suitable treatment of the façades, and the ingenious design of its furniture and fittings.

The architect of these buildings, which cover 2,000 square mètres with five stories in height, and have cost nearly two million francs, is M. Lheureux, one of the sectional architects to the City of Paris.

Cast iron, wrought iron, and sheet iron, employed in columns, floors, stairs, and roofs; stone and brick in the façades; pine, oak, and pitch-pine for the interior woodwork; together with cement and mosaic, are the principal materials which M. Lheureux has made use of, and which he has turned to account in a manner always practical and often very worthy of study.

The most interesting portions of the new construction are the large refectory in which 500 can be seated at once, the dormitories and the private studies for the older pupils, the covered gymnasium and the drawing-school with lecture-halls adjoining; this latter apartment and the lecture-halls or theatres can, by an ingenious arrangement, be in a few hours disencumbered of their special fittings and even of their platforms, in order to form a grand *salle de fêtes* intended to accommodate all the *personnel* of Ste. Barbe, scholars and teachers, as well as numerous visitors.

All these new portions, and the main staircases (of iron) which give access to them, are in other respects for use in common with the old College, and the two establishments have a common playground, the court, across which, at certain hours, the great shadow of the dome of the Pantheon extends. The larger view given in this number shows the exterior façade and entrance towards Rue Valette, and the smaller one the entrance from the inner court, at the end next to the Bibliothèque Ste. Geneviève.

The views are from photographs, and the plan is reproduced from that originally communicated by the architect to the pages of the *Encyclopédie d'Architecture*.

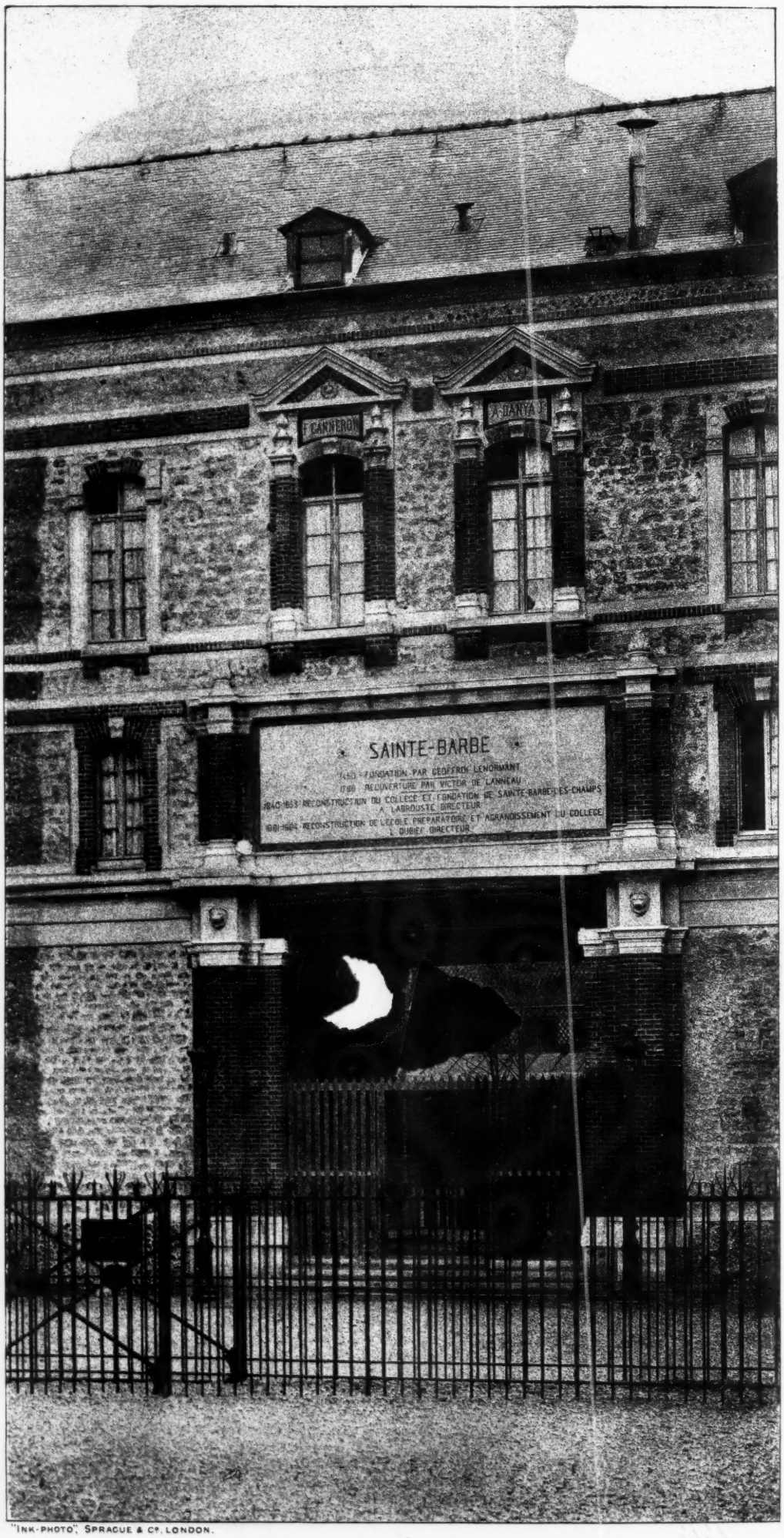
PORTION OF A DESIGN FOR A MUNICIPAL MANSION.

SOANE MEDALLION COMPETITION.

IN the first number of the *Builder* of this year, in an article on "Architectural Illustration," we drew attention to the necessity of clear definition and uniform *blackness* of lines (however thin they might be) in drawings which were to produce successful results in photo-lithography. The drawings by Mr. J. Thompson, which obtained a medal of merit in the last Soane medallion competition, are an unfortunate example of this fact. We had intended to reproduce the perspective view (which, though too like a town-hall, looks very well as a whole); but owing to the author having aimed at producing softness of effect, by using half-tint ink for the lines in the middle distance and sky (and to a general want of sharpness of line), the result was such that it would have been impossible to publish it. The detail elevation, which we publish, gave better results; but even there it will be seen that the fluting-lines of the columns are very faint and "rotten" in effect, not the result of defect on the lithographer's part, but of the fact that the lines in the drawing were *grey* and not black. The lines could, of course, have been put in again on the stone, but we preferred to leave them as a practical example of the necessity of lines of black and even tint for photo-lithography.

Of course the author may say that he did not make the drawing with that object, but we are disposed to hold that a line drawing, properly so called, should produce its effects and gradations by management of line, not by weakening the ink for half-tints. At all events, those who wish their drawings to be eventually published in lithograph form would do well to bear this caution in mind.

Eastbourne Improvement Scheme.—The Eastbourne Improvement Bill, now before Parliament, having caused much local interest and considerable opposition from some of the ratepayers and one or two of the magistrates of the borough, a poll was demanded, and the result made known on Wednesday last, the figures being:—For the Bill, 2,269; against it, 1,459, giving a clear majority of 810 in favour of the measure. The Mayor (Mr. G. Ambrose Wallis, C.E.), who is engineer to the sea-front works under the Duke of Devonshire, supported the Bill.

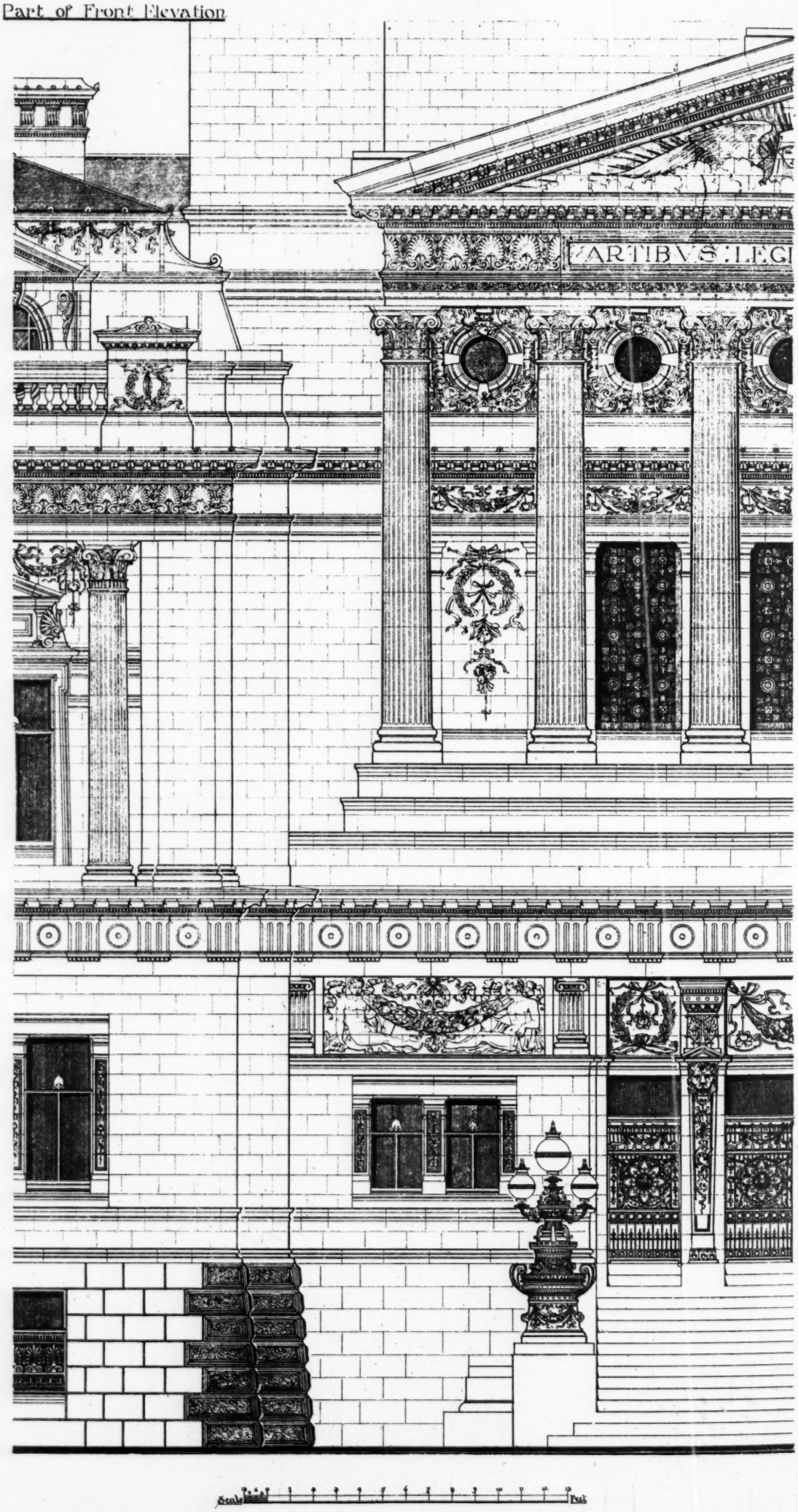

SAINTE-BARBE
1450 FONDATION PAR GEOFFROI LENORMANT
1798 RECOUVERTURE PAR VICTOR DE LANNEAU
1840-1853 RECONSTRUCTION DU COLLEGE ET FONDATION DE SAINTE-BARBE-ES-CHAMPS
A. LABROUSTE DIRECTEUR
1881-1884 RECONSTRUCTION DE L'ECOLE PREPARATOIRE ET AGRANDISSEMENT DU COLLEGE
L. DUBIEF DIRECTEUR

"INK-PHOTO", SPRAGUE & Cº, LONDON.

COLLEGE SAINTE BARBE, PARIS. M. LHEUREUX, ARCHITECT.

ENTRANCE FROM COURT YARD (SEE A ON PLAN.)

Part of Front Elevation



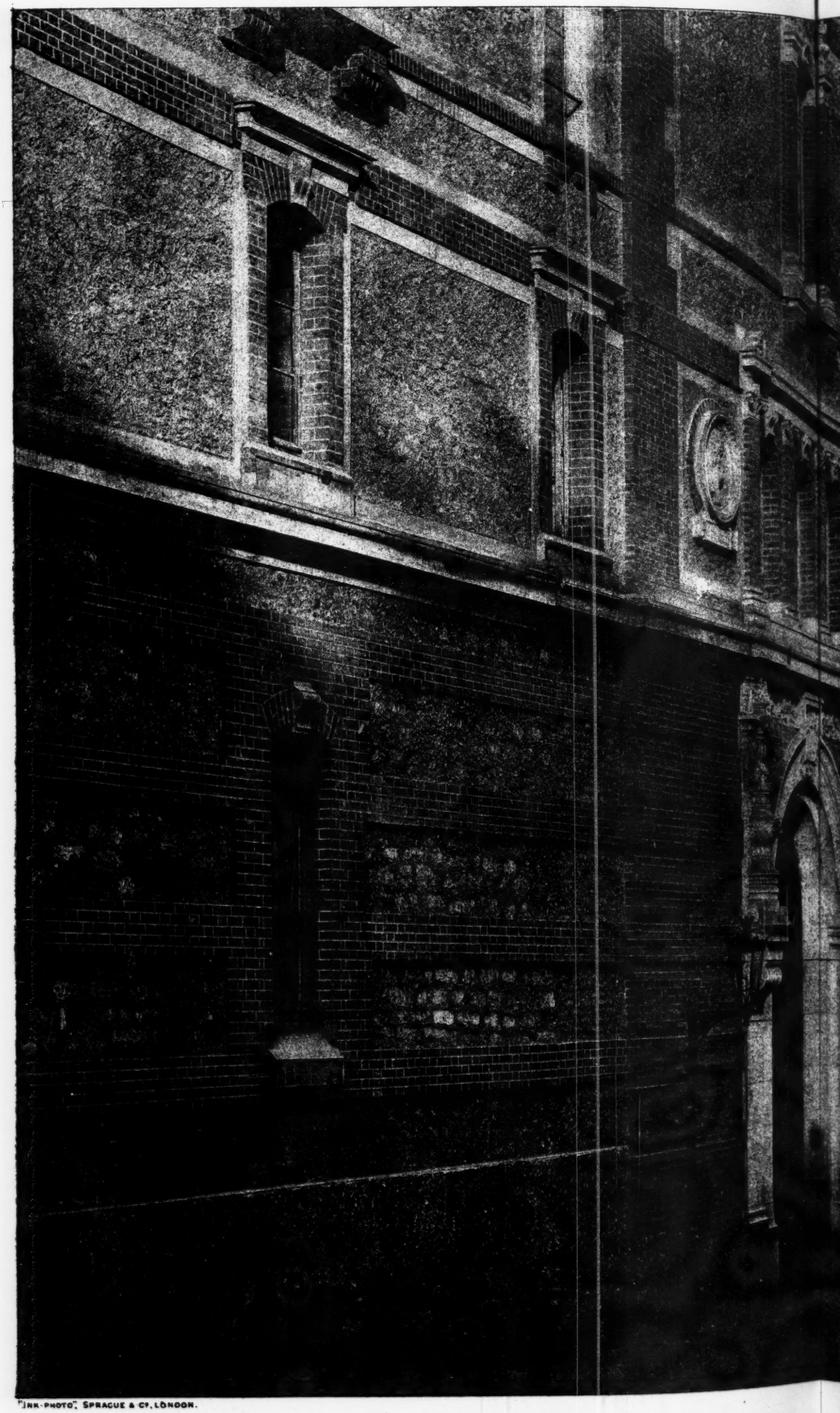
Scale

Soane Medallion, 1885.
Medal of Merit.

PORTION OF DESIGN FOR A MUNICIPAL MANSION.

By Mr. J. Thompson.

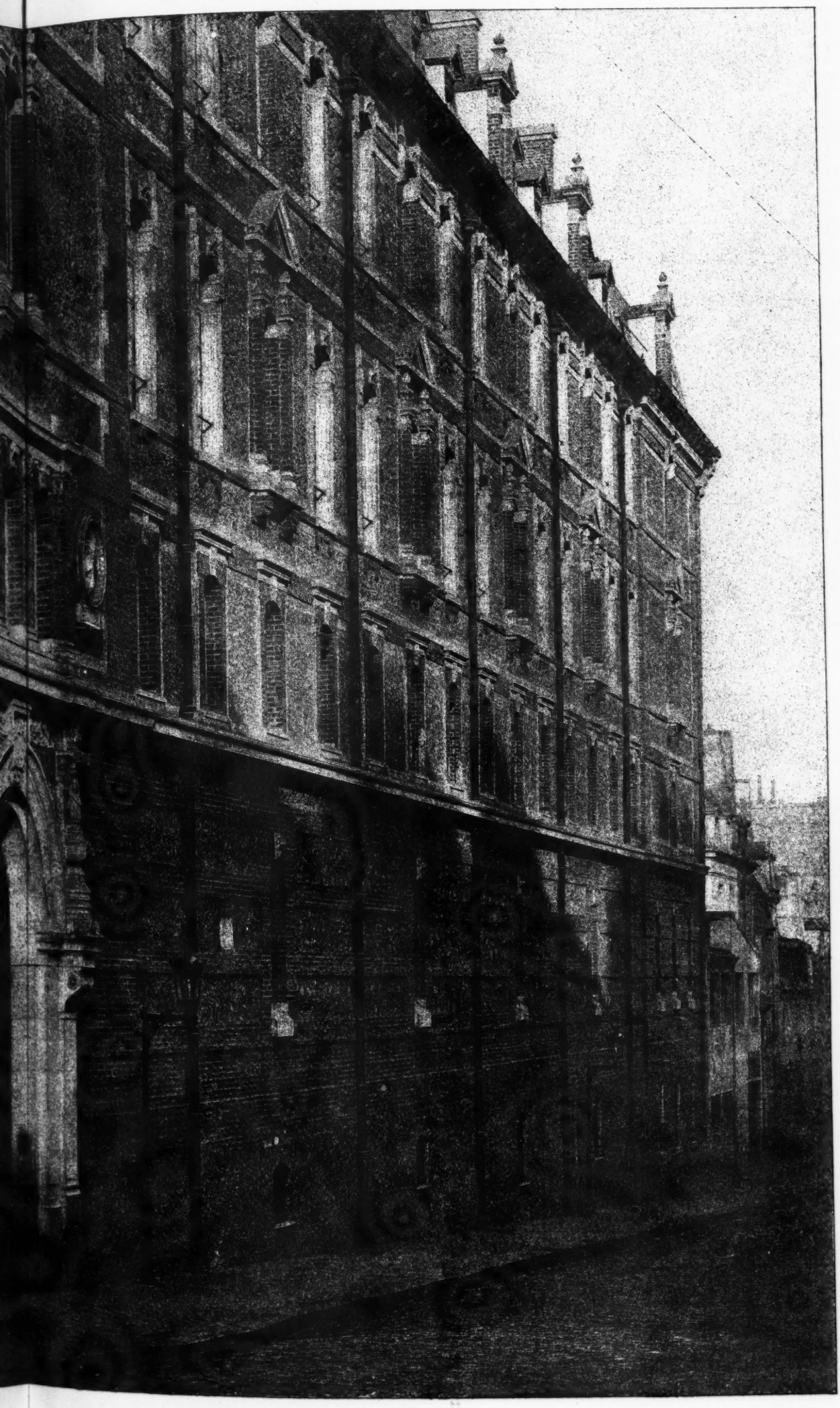
Wyman & Sons, Photo-Litho.



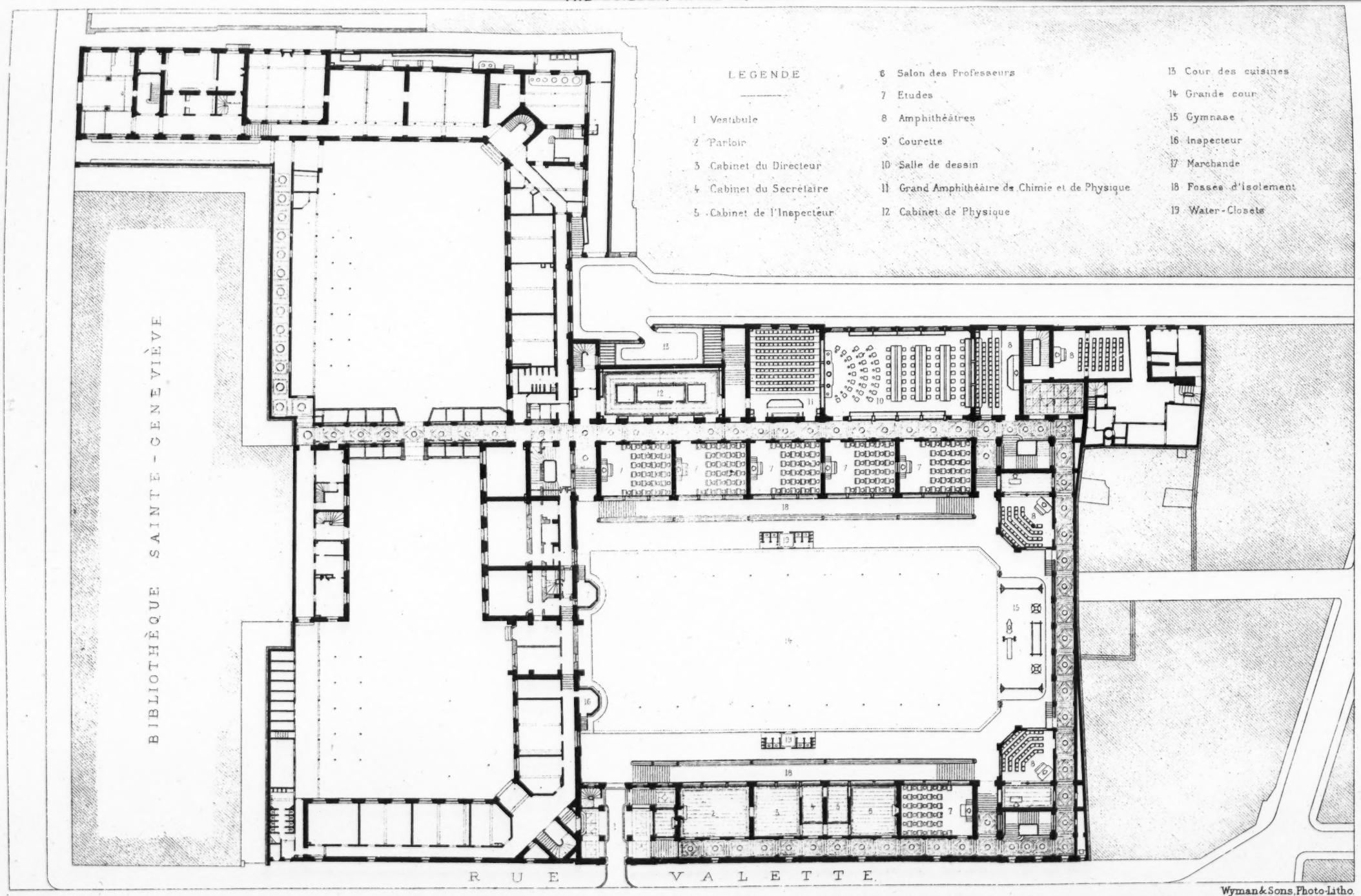
"INK-PHOTO", SPRAGUE & Co., LONDON.

NEW BUILDINGS, COLLEGE SAINTE BARB

FAÇADE TO THE



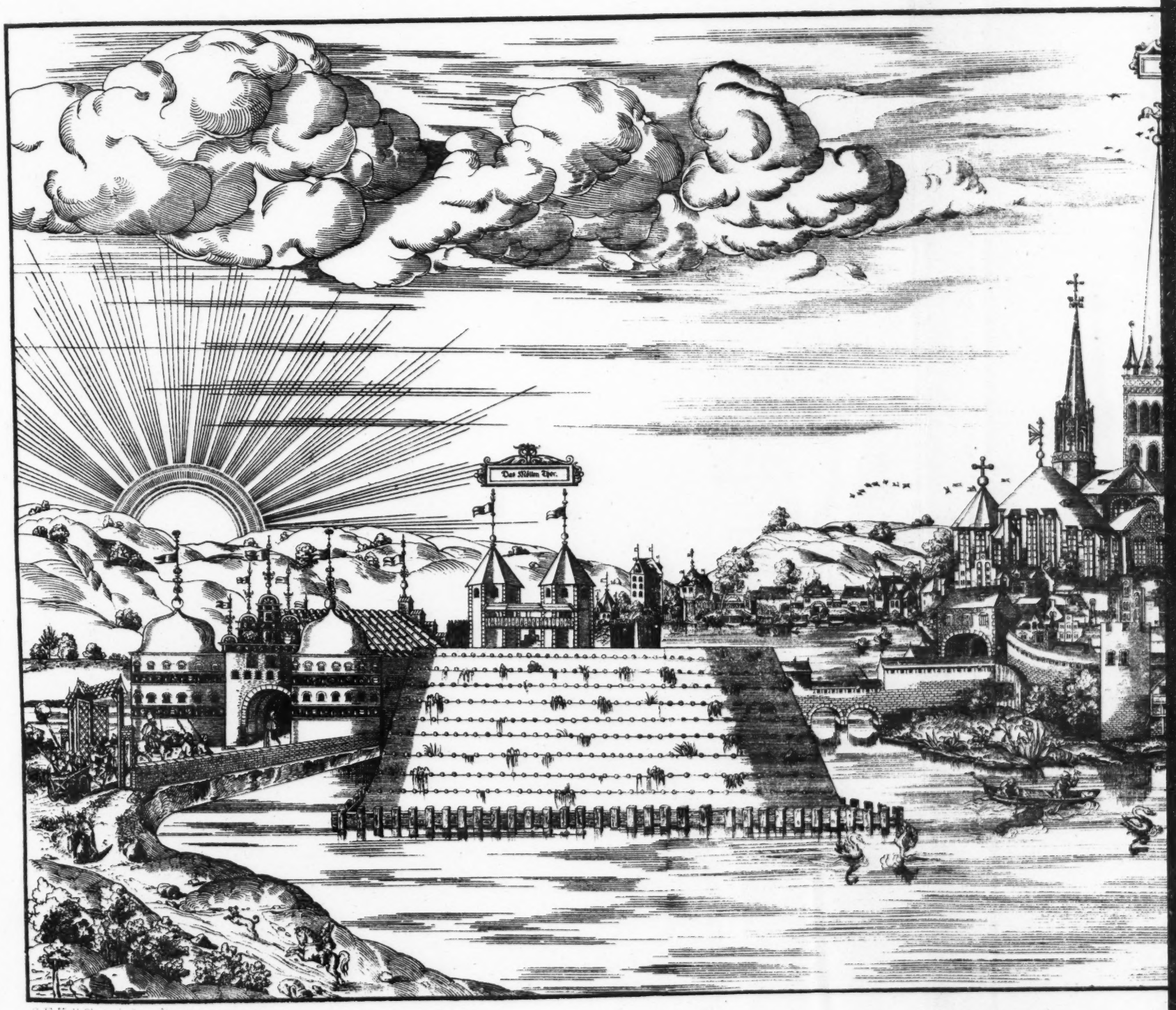
TE HARBE, PARIS. M. LHEUREUX, ARCHITECT
TO THE RUE VALETTE



E. Lheureux del.

Wyman & Sons, Photo-Litho.

PLAN OF COLLEGE SAINTE-BARBE, PARIS.—M. LHEUREUX, ARCHITECT.

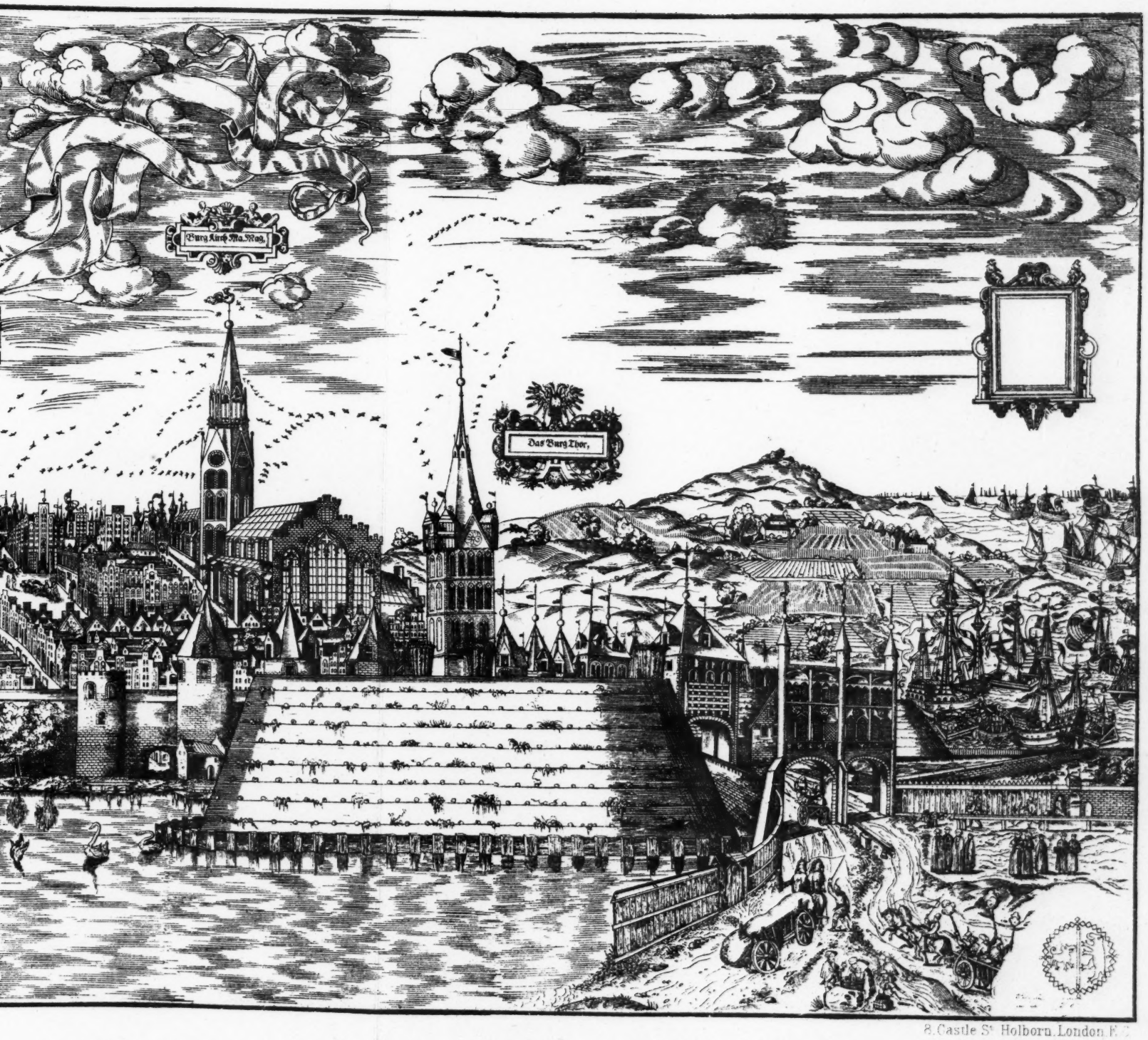


C.F. Kell Photolith. v. Bruckm.

LUBECK IN THE SIXTEENTH

NTH CENTURY. FROM AN OLD GERMAN ENGRAVING.

NTH CENTURY. FROM AN OLD GERMAN ENGRAVING.



8. Castle St Holborn. London F.

"INK-PHOTO", SPRAGUE & Cº. LONDON.

NATIONAL MONUMENT, FOR THE "PLACE DE LA NATION," PARIS. M. DALOU, SCULPTOR.

THE NORTHUMBERLAND AVENUE HOTEL.

VISIT OF THE ARCHITECTURAL ASSOCIATION.

THE sixth visit this year by the members of this Association took place last Saturday, to the Northumberland Avenue Hotel, Charing-cross, now in course of erection from designs by Messrs. Isaacs & Florence. The members assembled at three p.m., and were received by Mr. Lewis H. Isaacs, who was subsequently joined by Mr. H. L. Florence, his partner. A number of working and detailed drawings were shown. Mr. Charles Till, the clerk of works, was also in attendance. In explaining the drawings and building, Mr. Isaacs said great difficulties were encountered in preparing for the foundations of the hotel, in May, 1883, when a contract was entered into with Messrs. Perry & Co., builders, of Tredegar Works, Bow, who executed the works from the foundations, including the basement and part of the ground-floor. Owing to the nature of the site the excavations for the external walls had to be taken down to the great depth of 50 ft., to reach a solid foundation. A large quantity of running water was met with, which was found to come from an old river which took its rise at Highgate, and fell into the Thames about this point, and a powerful pump had to be worked by a 10-horse power engine, night and day, for six or seven months. The works were next stopped by the failure of the original company, and on the formation of a new one another contract was entered into with Mr. J. W. Hobbs, builder, of Croydon and Queen's-buildings, Southwark Bridge-road, who took up the work in September, 1884. The building has now been carried up to the fifth story. The intention of the first company was to erect an hotel with a frontage to the Avenue of 353 ft., but 53 ft. of land at the Charing-cross end being mortgaged, this, on the failure of the company, was lost. The services of the architects, Messrs. Isaacs & Florence, being retained by the new company, the design had to be largely remodelled to suit the present frontage of 300 ft. The site is in the shape of a triangle nearly, being 162 ft. deep at the deeper end, and contains upwards of 32,000 superficial feet. The building is to contain eight floors besides the basement, the main roof being 110 ft. above the ground-line. The style of architecture is the Italian Renaissance. The front elevation will be entirely faced with Portland stone, supplied by the firms of Messrs. Crickmay & Co., of Portland and Weymouth; Steward & Co., of Portland and Nine Elms; and by the contractor, Mr. Hobbs. The stone carving is being executed by Messrs. Daymond & Sons, of Edward-street, Vauxhall. The cast-iron stanchions were supplied and executed by Young & Co., of Eccleston Foundry, Pimlico; and the iron girders and stanchions by Dibley & Son. Mansion House-chambers, Queen Victoria-street. A number of rolled iron joists have been supplied by Mr. Matthew T. Shaw. The ground-floor contains a large dining-room or *salle à manger*, 93 ft. by 42 ft., and has a circular apse at one end, and two side wings in addition; there will also be several coffee-rooms, and rooms for billiards and other entertainments. The large dining-hall will be 32 ft. high, or up to top of first floor. The first floor is reached by a grand staircase in the centre of the building, and the upper floors by two other large staircases, and two passenger-lifts.

Through the 53-ft. slice of land being cut off, accommodation for 100 rooms, as intended, was lost, and the upper floors will now contain about 600 reception and bed rooms, with conveniences, and the hotel as now planned will stretch from the National Liberal Club at the Charing-cross end to the buildings recently erected by the Society for Promoting Christian Knowledge. The basement is covered over the whole area with concrete 6 ft. thick. It contains, besides the accommodation for the heating apparatus and engine-room, a number of spare sitting-rooms, and extensive cellarage. The area courts are faced with glazed white bricks supplied by Messrs. Cliff, Balfour, & Co., and by the Farnley Company. In excavating for the foundations, Mr. Isaacs said a few specimens of Roman pottery were found at a depth of 32 ft. The entire cost of the structure as originally designed to cover the larger area was 200,000*l.*, the building now being proceeded with on the reduced scale will cost 160,000*l.* The whole of the works are being executed from designs by the architects, under the superintendence of Mr. Charles Till; the general foreman of the works being Mr. Shute.

The visitors having inspected the various parts of the building as far as it has proceeded, returned again to the ground-floor, when Mr. H. D. Appleton, honorary secretary, proposed a vote of thanks to Messrs. Isaacs & Florence for their permission to view the building and to Mr. Isaacs for kindly explaining it.

THE ARCHITECTURAL ASSOCIATION

SOIRÉE.

No one can be always serious, and earnest students as the members of the Architectural Association are, they, twice a year, deign to amuse themselves; once, at the commencement of the session, they invite their friends to help them, and, on that occasion, the entertainment is usually of a decorously commonplace description, and it needs a general hat-smashing to make the evening a very exciting one. But when they meet again in April it is with the object of enjoying themselves in more or less Bohemian style, the significant word "smoking" appears upon the invitation card, and we put on our hat to go with a pleasurable curiosity as to what the entertainment committee shall have provided for our amusement.

This year, for the second time, the *soirée* took place in the Westminster Town-hall, which was already well filled when, at half-past eight, Professor Eloc à Smada, a learned archæologist of the twenty-second century, proceeded to address his audience upon the arts and architecture of the remote nineteenth in a lecture entitled "The Brass Age." The lecturer, in the course of his remarks, referred to a rare volume called "A Book on Building," evidently by a great authority on the subject. No actual domestic buildings of those days could be pointed to, because, in consequence of an odd, but legalised, custom, a house was liable to be forfeited a few years after its erection to the ground landlord, and the architects, being men of genius, contrived to erect buildings which would last only until the time of forfeiture arrived. So accomplished were the architects of that time that they practised in all styles, but their preference was for the "Sanitation" style,* and some of the greatest minds of the age devoted their energies to designing traps and cowls, pipes, pans, and patent junctions, and other features necessary to its development. After some reference to the dress of the period, the learned Professor concluded by calling attention to the curious diagrams on the wall, including a conjectural restoration of a building in the Sanitation style, in which the serpentine windings of drain-pipes, surmounted by tasty cowls, and crowned with an elegant smoke-preventer, produced a *tout ensemble* not so unpleasing as it might have been. There were also drawings of stained-glass windows by Mr. E. C. Lee, representing the 'arry-stocrasy of the period, and a clever picture by Mr. A. B. Pite, of the emaciated body of a cat discovered in Conduit-street, and represented clasping a pillar, which was the crest of the Institute of Architects.

The lecture was much applauded, and was succeeded by one of Professor Kerr's good-humoured speeches; and then, after a short interval, "The Ghost: a Burlesque Extravaganza Travesty of Hamlet," as the programme had it, was introduced with a song by *Marcellus*, an office boy,—Mr. Killmister,—in which he informed the audience how he *did not* become an architect. A characteristic conversation with *Tracio*, the pupil,—Mr. Miller,—is interrupted by the appearance of the *Ghost* (Mr. Gotch) and *Tracio*, who, in another song, tells how the latter is the elder brother who is supposed to be dead, and to whose practice and wife *John Claudius*, the ignoramus, has succeeded; and how, taking advantage of his brother's taste for unsweetened gin, he keeps him in durance vile to do the work while he himself takes the credit and profit. This story is repeated to *Hamlet à-Beckett*, the art-critic, — a part excellently played by Mr. Blagrove, whose mimicry of certain well-known persons was as entertaining as it was good-natured, and is confirmed by the *Ghost* himself, who, in strict accordance with precedent, will speak only to *Hamlet*. The latter threatens to expose the fraud, and sends *Tracio* for his *diary*, but *John Claudius Thorpe*, —Mr. A. Young,—enters and threatens an action for libel, and *Hamlet*, recollecting a recent *cause célèbre*, dissembles. Then, in a scene between *Thorpe* and the *Ghost*, the former is posted for an interview with his client, *Sir Thomas Tresham*, and the drawings being examined, a chimney-stalk is found to be carried on nothing; but the *Ghost* excuses himself by saying that the matter can be "set right in the details" or "omitted in execution." Something not shown upon the drawings is sought for in the specification and eventually found among the "Provisional sums." Meanwhile *Sir Thomas Tresham*,—Mr. Booth,—is announced. The plans are shown him, and many absurd explanations, due to misunderstood hints from the *Ghost*, who has assumed the appearance of a statue, are given by *Thorpe*, but, when the crucial question as to cost is asked, the former says he'll be —— if *he* knows; and, coming down from his pedestal and being recognised and seconded by *Sir Thomas*, threatens his brother with an action, and the scene closes with an agreement to refer the matter to arbitration.

The second scene is laid in the arbitration room in Conduit-street. *Hamlet à-Beckett* appears as arbitrator, and Mrs. *Gertrude Weldon Portia*, the actor of which part retains his incognito, is counsel for the *Ghost*. The witnesses are called and cross-examined by *Portia*, and *Marcellus* is asked what are his duties in *Thorpe's* office, and mentions that, among other things, he has to

> Take out the quantities, and sweep up the cinders,
> To draw the details, and clean the winders.

The case for each side being concluded, the arbitrator proceeds to make his award, and first gives "every one a silver medal," but is disconcerted by the *Ghost's* claiming an "extra" medal on the ground of being a Scotchman. The affair is finally concluded by the elder brother receiving back his practice and his wife, and the younger being condemned by *à-Beckett*, in a black cap and in solemn tones, to read his Book on Building,—a sentence which causes the criminal to fall fainting into the arms of his pupil.

The play was replete with audacious puns and comic references to the recent sayings and doings of the profession, and several pretty songs were introduced, the most effective being perhaps the final duet by Messrs. Booth and Gotch.

At the conclusion, the actors were twice called back, but repeated cries for "author" met with no response.

During the evening Mr. Stuart's Orchestral Society performed a selection of good music, and at about eleven o'clock dismissed the company with the national anthem.

The entertainment was a decided success, and the Association is very much indebted to the gentlemen who took so much trouble to provide it; but we think that some of the older members felt themselves a little aggrieved that there was so small an opportunity for friendly chat, and that the absence of so many familiar faces may have been partly due to the growing tendency of the annual *soirée* to become merely an entertainment. A. A.

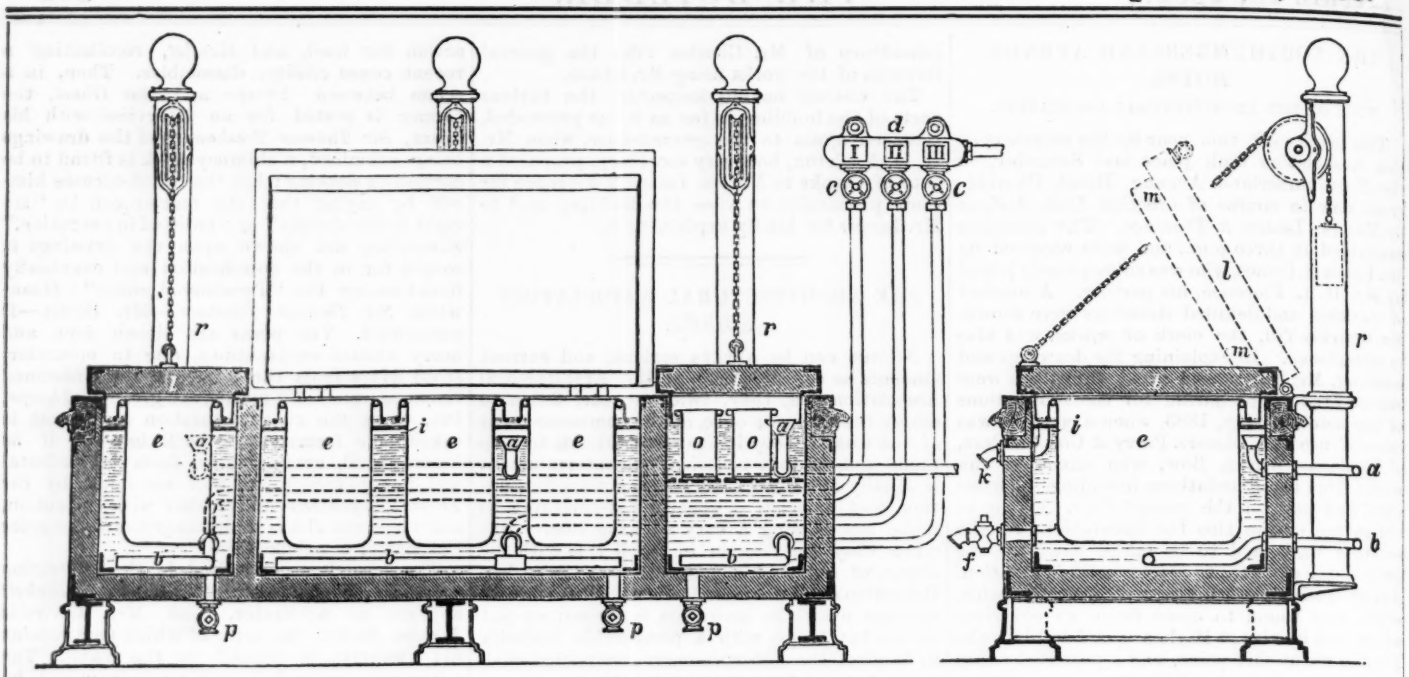
* We fear the evidence the learned Professor could collect would hardly bear out this statement.—ED.

THE DISTRIBUTION OF ELECTRICAL ENERGY BY SECONDARY GENERATORS.

SOCIETY OF ENGINEERS.

AT a meeting of the Society of Engineers, held on Monday evening, April 13th, at the Town Hall, Caxton-street, Westminster, Mr. Charles Gandon, President, in the chair, a paper was read by Mr. J. Dixon Gibbs on this subject.

The author laid down the following principles:—A complete system of electrical distribution necessitates the supply to individual householders of electrical energy to be applied at will to the production of light by means of any type of lamp, whether arc or incandescent, or to the production of mechanical power by means of motors, or to the production of currents suitable to electro-chemical purposes. Every lamp or other receiving apparatus must act independently of the others, and without affecting them. The regulation must be automatic, instantaneous in its action, and require no attention; and, further, must be of such a nature that the generating dynamo machine shall produce at each moment the exact amount of electrical energy necessary to supply all the apparatus in action. Nothing that has yet



Becker's Cooking Apparatus.

been done in the way of lighting streets or isolated establishments by means of machinery on or near the premises can claim to amount to a distribution of electricity, which to be practical must be effected from distant central stations, and with the same facility as gas or water.

It is generally admitted that the limit of large conductors being soon reached, the future lies in the employment for distributive purposes of conductors of small diameter: this necessitates the employment of currents of small quantity and high electro-motive force, which, not being generally suitable for direct use, require to be transformed on the spot where the energy is to be utilised into currents of small electro-motive force and varying quantity, suitable in fact for any purpose. The Gaulard-Gibbs Secondary Generators are such transformers. In the type now in use the inducing and induced circuits are composed of copper discs superposed, and furnished with ear pieces for the purpose of connecting them together. The simplicity of this method of construction is obvious; the weight and size of the apparatus are remarkably small in relation to the work it is capable of performing. The measurements made by Dr. Hopkinson, and by a Committee of the International Jury of the Electrical Exhibition of Turin, confirmed by practical experience, amply prove their return in effective work to be ninety per cent.

The currents obtained by means of induction are necessarily always alternating, and are not on that account adapted to many purposes, such as the driving of various kinds of motors and electro-chemical purposes: the inventors have sought and found a way of overcoming that difficulty by straightening out or redressing an alternating current. This is accomplished by a simple apparatus which has the property of taking, under the influence of a very small current, a speed which is synchronic with the changes of direction of the current which feeds it.

The employment of alternating currents of high electro-motive force, on conductors metallically closed with the terminals of the dynamo machine, has been admitted by high authorities to be practically free from danger to the public.

An important installation is being prepared in Bond-street by Sir Coutts Lindsay & Co., Limited, under the Gaulard and Gibbs system, of the merits of which the public will shortly have an opportunity of judging.

St. Clement's (?) Well.—We understand that an old well answering fairly to Stow's description of the position of St. Clement's Well, was come upon the other day in the at present waste ground adjoining the Law Courts, between Clement's Inn and the Courts. According to our informant, the well was bricked round and contained water about 30 ft. below the ground level. It was filled in, and nothing done to mark the spot, which seems rather stupid.

BECKER'S PATENT COOKING APPARATUS.

THIS apparatus, of which a longitudinal and transverse section are here given, has been in use for some time in Germany for cooking on a large scale in civil and military establishments, and it has been in use for some little time on trial in the kitchens of the St. Pancras workhouse.

The following is the explanatory reference to the portions figured in the section:—

(*a*) Funnel of overflow connected with condensing pipe leading to cistern, and serving to regulate the water bath.
(*b*) Steam pipes provided with minute holes bringing steam to each compartment.
(*c*) Steam valve and stop-cock affixed to the steam pipe of each compartment.
(*d*) Steam distributor, whence the steam coming from the boiler is distributed through the valves *c c c* into the pipes *b b b*.
(*e*) Cooking vessels or pans, fixed to the hearth-plate *i*, and surrounded by water.
(*f*) Taps fixed to the pans *e e e*.
(*i*) Hearthplate, in which the several cooking-pans *e e e e* are fixed, and which is covered with a layer of water of 2½ centimètres (1 in.).
(*k*) Iron knee with valve and socket tap to let off water from hearthplate *i*.
(*l*) Double walled covers to each compartment filled with isolating material.
(*m*) Copper rim fixed to cover *l*, which, when the cover is down, dips into the water on the hearthplate *i*, hermetically closes the vessels and protects them from outer air.
(*o*) Small movable cooking-pans.
(*p*) Taps to let off the baths.
(*r*) Pillars with counterweights, chains and rollers, to balance cover *l*.

The apparatus fixed at St. Pancras is capable of cooking for about 500 persons, at an estimated expenditure of about 1½ cwt. of coal per day. The head cook of the workhouse kitchen reports very much in favour of the apparatus. It is, from what we saw of it, exceedingly compact and handy to work. All steam is kept out of the actual cooking vessels by their edges being trapped in a trough of water, as shown. The heat is well shut in by the double wall and cover of the whole; how little waste of heat there is is shown by the fact that during cooking, with the water at a temperature of 85°, the outer face of the lid is quite cool.

The apparatus can be left over-night at 85° (the usual temperature used), and will be found in the morning, without any attendance, to have sunk no lower than 75°: so we are informed, but of this we cannot speak from observation. The cook who has been in charge of it is of opinion that there is much less waste of nutriment in using this apparatus than with the ordinary copper; he puts the difference of loss at 7 per cent. as against 20 per cent. with the copper. The inventor, Mr. Carl Becker, is anxious to have the apparatus introduced to the notice of architects and managers of public institutions, barracks, &c., in this country. As far as our inspection of this one specimen goes, and the particulars we learned as to its operation, we should recommend it as well worth attention, where it is desired to have cooking done on economical terms, and with clean and compact working, for large numbers of people.

CLERKS OF WORKS' ASSOCIATION OF GREAT BRITAIN.

THE second annual dinner of this Association took place on Monday evening last at the St. James's Hall Restaurant, Mr. Goymour Cuthbert, A.R.I.B.A., in the chair, supported by a large number of the members and friends of the Association.

In proposing the toast of the evening, "Prosperity to the Clerks of Works' Association of Great Britain," the Chairman referred to the great services which intelligent and competent clerks of works were able to render to architects in these days of hurry and bustle, when architects were called upon to provide buildings for varied and often novel purposes. An architect who had a competent and reliable clerk of works could safely delegate to him a great deal of the general supervision of the execution of his buildings. It was because the Association had for its primary object the bringing together of all competent clerks of works with a view to their mutual benefit, that it was deserving of the warm support of the architectural profession. The Association had now been established three years, and from what he could see of it, it had a vigorous and useful career before it.

Mr. Dashwood, the Secretary, responded, stating, in the course of a humorous speech, that the Association now numbered nearly a hundred members, and had established a small monthly *Journal* as a means of communication between the committee, the members, and architects.

The other toasts included "The Architects and Surveyors," proposed by Mr. Wilkinson, and responded to by Mr. C. Harston; and "The Hon. Treasurer" (Mr. John Oldrid Scott), proposed by Mr. Hocking, who referred to the great services which Mr. Scott had rendered, and continued to render, to the Association.

HARBOURS AND DOCKS.

SIR,—In your valuable article on my book on "Harbours and Docks," which appeared in your issue of the 4th inst. (p. 471), you express a desire for a clear explanation of the statistical diagram showing the tonnage of the vessels entering eighteen of the principal British ports each year, from 1873 to 1883, which appears on p. 628 of the book. Your reviewer states that the figures are not in accordance with those given in the "Statistical Abstract" for 1883, owing, apparently, to its omitting the important item of coasting traffic. My diagram was based on the Navigation and Shipping tables issued annually by the Board of Trade, and purposely includes coasting vessels as well as foreign trade. These official tables are clearly the proper source whence to derive such statistics. Moreover, in estimating the trade of a port, it would manifestly be most unfair and inexpedient to leave out of account the coasting, or home, trade, as the capabilities and prosperity of a port must be measured by its whole trade, and not merely by its foreign and colonial trade, which in some ports is of comparatively minor importance. Taking, for instance, the Tyne ports, which send so much of their coal to the British ports, the tonnage of the vessels entering in 1883, according to

your reviewer's system of reducing, amounted only to 2,723,466 tons; whereas the total tonnage of vessels entering reached 6,373,801 tons. Would it be fair, in comparing the Tyne ports with other British ports, and with the flourishing Belgian port of Antwerp, to adopt the smaller figure as representing the trade of the Tyne? I venture to think not, and consider that the whole trade of a port must be taken as being the trade for which quay accommodation and other facilities must be provided, and not merely the foreign trade, which would vary in each country, according to the size of the country and the importance of its local trade.

It is suggested that M. Pettit's name should be Petit, which is like proposing that Mr. Forrest's name (which appears in my preface) should be spelt Forest. On this point I have the authority of M. Pettit's own signature, which I regard as sufficient.

By glancing only at the first part of my book relating to harbours, your reviewer has given neither the full number of ports referred to, nor at all a complete list of engineers who have aided me with plans or other information. If he had turned in the index to the headings of ports and docks, instead of confining his attention to harbours, he would have found that 104 ports have been indexed, not merely sixty-nine as he states, though I naturally disclaim any intention of furnishing an encyclopædic dictionary of the ports of the world. As I fully agree with your reviewer that the value of a book like mine is greatly increased by the orginal information kindly sent me from various quarters, allow me to add that whereas he enumerates thirteen engineers who have assisted me with plans or details, I am really indebted altogether to at least thirty-eight engineers, as acknowledged in the book.

L. F. VERNON HARCOURT.

*** Mr. Vernon-Harcourt explains that in the diagram on which we commented he has lumped together ocean and coasting traffic; but he does not explain the discrepancy between this diagram and the table on p. 630. As to the importance, in questions of harbour accommodation, of distinguishing between the two kinds of traffic, it is conclusive to observe that while the chairman of the Select Committee on Harbour Accommodation names 850 piers and harbours on the coasts of the British Isles which are available for fishing and coasting traffic, only thirty-seven ports have sufficient foreign trade to be individually named in the "Statistical Abstract."

In taking the trouble to collect the names of the thirteen engineers from whom Mr. Vernon-Harcourt received information as to some of the sixty-nine harbours indexed on p. 674, our object was, as stated, to show the merit of the work, which rather seems to us to demand acknowledgment than to justify complaint that we did not repeat the trouble in the case of the forty-five docks indexed on p. 666. A list of authorities would have added to the value of the book.

OPEN SPACES IN REAR OF HOUSES.

Sec. 29, *Met. Building Act*, 1855.
Sec. 14, *Met. Building Amendment Act*, 1882.

SIR,—Referring to your article in your issue of March 28th [p. 464], I think that no difficulty need arise in the construction of these two sections. The wording of sec. 14 of the Act of 1882 is perfectly clear. It does not repeal sec. 29 of the Act of 1885; on the contrary, it states that it is in addition to the rules of the said Act. And if you continue sec. 29 of the Act of 1855 by adding at the end thereof sec. 14 of the Act of 1882, and read on as though the two sections were one, we should arrive at the proper construction, both sections remaining as written. It must be remembered that in both sections it is clearly expressed and definitely stated to what extent in each case the word every (building) is to be qualified. Thus in sec. 29 the word *every* is qualified by the words "used or intended to be used as a dwelling-house, unless all the rooms can be lighted and ventilated from a street or alley adjoining," while in sec. 14 the word *every* is qualified by the words "new building begun to be erected upon a site not previously occupied in whole or in part by a building, after the passing of this Act, intended to be used wholly or in part as a dwelling-house." And we have no more right to further restrict the application of sec. 14 by the qualification of the word *every* used in sec. 29 than we have to restrict the application of sec. 29 by the qualification of the word *every* in sec. 14.

It would follow, therefore, that a building might come under the meaning of sec. 29 and not of sec. 14, or under sec. 14 and not 29, or might come under both. If it only comes under sec. 29, then it would only require an open space (*i.e.*, a space not covered) of 100 ft. If it only comes under sec. 14, then it would only require the open space according to its frontage as required by that section (this open space may be built upon up to the level of ceiling of ground floor). But if it comes under the meaning of both sections, then it would require an uncovered space of 100 ft., as required by sec. 29, plus the open space as required by sec. 14 of the Amendment Act, 1882. The 100 ft. uncovered space required by sec. 29, if placed at the rear could, of course, form part of the space required by sec. 14.

FREDERIC HALE COLLINS, A.R.I.B.A.

SIR,—Referring to Mr. Banister Fletcher's letter published in the *Builder* of April 11 [p. 530], I should like to be permitted to say that my opinion coincides with his, and that it appears to me that houses in which "all the rooms can be lighted and ventilated from a street or alley adjoining" (to quote the words of sec. 29 of the Building Act) remain exempt from the action of the Amendment Act of 1882, as well as from that of the original Act.

The two enactments read together form a perfectly intelligible statement of requirements, without its being necessary to suppose that this exemption is repealed; and this being so, the direction, alluded to by Mr. Fletcher, that the amendments are to be regarded as in addition to and part of the Building Act, seems to maintain, not repeal, this exception.

Of one thing I am certain. If to a legal mind the view which Mr. Fletcher and I have taken be tenable, it is quite certain the London magistrates will take it. One of the most experienced of them said in my hearing a few days ago, "These Acts, which go to prevent a man's doing what he likes with his own, must be construed with the utmost strictness," and proceeded to dismiss a summons on a technical point, which he might have waived or postponed had he cared at all to consider the real point at issue.

There are one or two other matters in connexion with the open space in the rears of houses about which authorities are not agreed; and no doubt the exact state of the law will remain matter of opinion till some case is settled by a Superior Court.

T. ROGER SMITH.

LIME MORTAR GAUGED WITH CEMENT.

SIR,—Replying to the letter of "Mortar" in your last number [p. 530], I, some fifteen years since, in an alteration work where new brickwork was to be added to old, by reason of the expense was prevented from building the new work in cement, so I used the following, viz.:—Lime-mortar of one measure of fresh burned grey stone lime to three similar measures of clean sharp sand. Portland cement mixed with equal quantities of similar sand. The lime-mortar and cement were first mixed separately, the lime-mortar well tempered, and the cement mixed only in small quantities as required, and both afterwards mixed and well beaten up together in the proportions of one of the cement mixture to six of the lime-mortar. I had but little faith in its being superior to lime mortar only; I do not defend it theoretically, because I do not understand it. I have never used it since, because I have not had the same motive to do so, but the practical result was that the new work did not settle from the old. The whole remained perfectly sound, and when, shortly afterwards, at the completion of the job, it was necessary to cut away some of the new work, it was found to be exceedingly hard and tough.

Perhaps the extra beating up and mixing had something to do with the favourable result. W.

April, 1885.

SUPERIMPOSED IRON COLUMNS.

SIR,—Will any of your correspondents inform me of the best way to superimpose one cast-iron column above another, each column to support two beams, 14 in. deep, by 12 in. wide, built rolled girders? Lowest column, 10 in. diameter; next, 8 in. diameter; next, 6 in. diameter; next, 5 in. diameter, each girder carrying say 40 tons.

ENQUIRER.

INTERLOCKING ROOF TILES.

SIR,—I notice in your valuable paper of the 28th of March [p. 442], a report of a lecture given by Mr. J. Slater, B.A., F.R.I.B.A., under the auspices of the Carpenters' Company, introducing, amongst other roof coverings, my patent roofing tiles. He states no maker has yet devised an interlocking "hip" tile, and I beg to take the opportunity of correcting this, as I supply an interlocking hip-tile specially designed to work with my tiles, and I believe it is the only interlocking hip-tile in the market. These tiles interlock at the top and bottom, but, so far, I have not perfected a tile for interlocking at the sides as well as at the ends, but this is having my very careful attention, and I hope to bring out an interlocking hip-tile to lock on all four sides in the same manner as my patent roofing tiles.

C. D. PHILLIPS.

COLLAPSE OF A LARGE-SIZED SEWER.

SIR,—The collapse of a stoneware pipe sewer at Dorking as described in your last issue [p. 530] appears to point,—apart from the very unique direction for filling in a sewer trench,—to entire ignorance of, or happy disregard for, an elementary rule of engineering construction, namely, making provision for a due factor of safety, such as is usually deemed necessary.

I admit that this rule is but too frequently ignored in sewer laying, but that in no way excuses the fact; and surely work that is intended to last for generations hidden away underground, and which cannot be renewed except at *more* than a repetition of first cost, should be endowed with the widest margin of safety, instead of, as in this case, considerably less than none at all.

The fallacy of filling in trenches in the manner described is clearly demonstrated by your correspondent, but this is merely an addition to the elementary or primary error of laying such large-sized pipes without any concrete underneath to give a firm foundation, or any at the sides to give abutments to the arch. Pipes of such diameters should be laid in concrete. So treated they make the best of sewers, and afford facilities for the quickest construction, and this method of laying large pipes is that adopted by engineers of experience.

I should have liked to comment on the risk to contractors as illustrated by this occurrence, but I fear to trespass further on your space on this occasion.

Perhaps the engineers to the scheme will give your readers the benefit of their views as to any exceptional causes there might be in their opinion for this failure of stoneware pipes, the quality of which appears to have been beyond question.

ENTREPRENEUR.

COLOURED CEMENT.

SIR,—In answer to your correspondent, "Portland" [p. 498], I saw, when looking round the last Exhibition of Building Appliances at the Agricultural Hall, some samples of cement, plaster, &c., treated with different kinds of colouring matter, producing the effect he requires. These were shown by the Cambrian Chemical Company, of 110, Cannon-street, from whom I have no doubt he could obtain full information. J. D.

RECENT PATENTS.

ABSTRACTS OF SPECIFICATIONS.

1,046, Water-closets. H. Sutcliff.

The basin has an extension or recess at one side of the basin in which is placed a tipping vessel, hinged out of centre, so that when the said vessel gets full of water the weight overbalances it. The valve in the cistern is conical with skeleton form to admit the water easily. There is also a system of levers for raising the float and closing the inlet.

1,258, Roads and Pavements. E. Hill.

Metallic supports are placed at intervals on a level surface and wood blocks driven between them. The interstices are filled up and the surface may be asphalted. The supports consist of a base plate and standard supported by ribs, between which the blocks are driven.

1,202, Joining Lead Pipes. J. Jakens.

The ends of the two lead pipes are placed near to each other, a short metal tube is introduced between the ends, leaving an annular space. A coating of asbestos or other heat-resisting substance surrounds the joint and has an opening at its upper end for the introduction of the tube of a funnel. Molten metal is poured through the funnel and fills the annular space, fusing the ends of the pipes and forming a homogeneous joint. Holes may be made in the funnel to assist the flow of the metal, and an overflow may also be provided for.

1,407, Corrugated Shutters. S. P. Wilding.

Shields of metal are placed on the corrugations and riveted through the shutter to pads which do not project beyond the crests on the other side. The shields may be placed along both edges of the shutter and in any other position where it requires strengthening. They may be placed on every alternate or every third crest. The pads deaden the noise when rolling up.

1,498, Vice. W. P. Thompson.

Ordinary jaw-vice, but with movable jaw, against which a spring fitted on end of fixed jaw presses. The jaws are further strengthened by clamps.

711, Window Sash Fastener. G. Bisley.

A lever abuts at one end against the upper sash and, at the same time, an eye on the centre engages with an undercut pin on the upper sash. The other end of the lever has a nut formed on it, through which passes a screwed rod, which may be rotated by a milled head. By rotating this screwed rod the two sashes are pressed together and prevented from sliding by the undercut.

714, Glazing Greenhouses, &c. T. W. Helliwell.

The glazing bar is formed with channels on each side, the upper ones receiving the glass and carrying

away any water that enters them. The bar, in one piece of metal, is open at the top, and the edges are turned over the glass to keep it in place. The glass is retained by the elasticity of the bar, which is sprung together to admit it. It is further secured either by a spring cap or by T-headed bolts, which hold on an outer cap and press against the under sides and thereby spread out the bar. When double glazing is required the bar is modified, so that the flange and trough are at a lower level. Sheets of glass are then carried in the two angles formed by the bars and pieces of metal.

APPLICATIONS FOR LETTERS PATENT.

April 2.—4,150, J. O'Callaghan, Securing Door Knobs or Handles to Spindles.—4,151, W. Heys, Manufacture of Fire or Water Proof Boards from Asbestos.—4,154, R. Best, Improvements in Chandeliers.—4,164, W. Stobbs and E. White, Appliance for Preventing Down-draught in Chimneys.—4,169, G. Holloway and H. Stanning, Improvements in Window Fasteners.—4,170, F. Robinson, a Collapsing Wardrobe.—4,183, W. Berry, Construction of Tool Holders.—4,192, G. Henkel, Improvements in Hoisting Machinery.—4,193, W. Lake, Heating or Warming Apparatus.—4,205, F. Vergard, Improvements in Stoves and Fire Grates.—4,209, F. Henderson, Improvements in Flushing Apparatus for Water Closets, &c.

April 7.—4,239, J. Miller and C. Cameron, Improvements in Washhouse Bins or Boxes and in Flushing Drains.—4,241, P. Walker, Improvements in Ventilators.—4,243, H. Allison, Improvements in Burglar Alarms.—4,245, C. Longbottom, Fastening Window Sashes, Doors, &c.—4,247, G. Crowe and W. James, Cisterns or Flushing Apparatus for Water Closets, &c.—4,269, W. J. and W. F. Rowe, Waste Preventing Cisterns.—4,275, T. Oakley, Domestic Fireplaces.—4,280, A. de Bourbon D'Este and Others, Additional Improvements in Veneer and Method of Applying same.—4,289, D. Waldie, Improvements in Mortise and Tenon Work.—4,294, P. Jensen, Improved Arch or Span Bricks or Blocks.—4,295, H. Lake, Fastening Doors.—4,297, H. Lake, Locks for Fastening Doors, &c.

April 8.—4,342, N. Lines, Boring or Drilling Wood or other Material, vertically, or at any required angle.—4,344, J. Gibbard, Wooden Block Flooring and Lining for Walls.—4,345, W. Sidgwick and J. Day, Latch Locks.

April 9.—4,379, H. Ibbotson, Opening and Closing Sash Windows.—4,397, J. Lamb, Improvements in Ventilators.—4,398, C. Murray, Manufacture of Bricks, &c.—4,403, M. Conrath, Embossed Wall and Ceiling Decorations.—4,413, W. Pope, Securing Sliding Window Sashes and Shutters, and Fasteners for same.—4,419, W. Stein, Improvements in Bakers' Ovens.

PROVISIONAL SPECIFICATIONS ACCEPTED.

725, C. Tebbutt, Bricks for Paving Cattle Markets, Sheds, Yards, &c.—1,189, T. Thorne, Improved Burglar Alarm.—2,821, W. Stobbs, a Novel Construction of Spike or Nail.—3,368, G. Whiteside and J. Hoyle, Apparatus for Brushing and Cleaning Timber previously to Planing, Cutting, or Sawing.—3,420, G. Shorland, Improvements in Air-warming Grate Backs.—3,549, W. Lea and J. Beech, Adjustable Brackets for Supporting Shelves, &c.—3,607, G. Sowerby, Ventilators for Buildings.—3,650, B. and D. Cross, Waste-preventing Cisterns.—3,661, A. Stephens, Apparatus for Supplying Water to Water-closets, Urinals, &c.—3,707, G. Stevens, Opaque Stained Glass for Wall Decorations, &c.—2,934, A. Ransome and T. Wilkie, Wood Planing and Moulding Machines.—2,992, J. Beanland, Improved Brick, Quarry, or Slab for forming Smoke and Air Flue in Chimney Stacks.—3,022, H. Haddon, Machinery for Cutting and Dressing Stone.—3,435, J. Brown and T. Porter, Apparatus for Climbing Chimneys, Shafts, Columns, Steeples, &c.—3,552, J. Barnett, Improvements in Stoves.—3,585, G. Wolff, a Wood Stain.—3,604, J. Anderson, Self-regulating Water-waste Preventer.—3,660, J. Lewis and C. Rawlings, Fire Grates and Stoves.

COMPLETE SPECIFICATIONS ACCEPTED.

Open to opposition for two months.

6,262, H. Lake, Improvements in Bridges.—6,274, J. Hartill, Window Blind Pulley Racks.—8,810, W. Lake, Apparatus for Dressing and Shaping Stone.—9,172, W. Morgan, Latches for Gates and Doors.—2,886, W. Miller and C. Nichols, Accelerating the Setting and Hardening of Cements.—2,988, H. Kurten, Improvements in Water-closets.—3,038, H. Lake, Materials for Covering Walls and Ceilings.—7,490, W. Clark, Apparatus for Casting or Forming Ceilings, Coating Walls, &c.—8,175, A. Dobbing, Improvements in Flooring Cramps.—3,138, G. Martin, Improved Method of Securing Slates to Roofs.

Chubb & Sons' Lock and Safe Company (Limited).—The new hall, library, coffee-tavern, and industrial dwellings which this company have provided for the use of the men and families in connexion with their works in the Glengall-road, Old Kent-road, will be opened on Monday afternoon next.

RECENT SALES OF PROPERTY.

ESTATE EXCHANGE REPORT.

APRIL 8.

By GRAVES & SON.

Westbourne Park—4, Durham-terrace, 66 years, ground-rent 10*l.*	£960

APRIL 9.

By VENTOM, BULL, & COOPER.

Hackney—177, Mare-street, 55 years, ground-rent 15*l.*	1,250

By R. TOMLINSON & CO.

St. Margaret's, Twickenham—"Novesium Lodge," 96 years, ground-rent 9*l.*	620

By NEWBON & HARDING.

Stamford Hill—8 to 14 even, 37 years, ground-rent 75*l.*	1,400
Ball's Pond-road—195 and 197, 35 years, ground-rent 6*l.*	690
Nos. 2, 3, 15, and 16, Stanley-street, 67 years, ground-rent 7*l.* 10s.	1,160
Peckham—Ground-rents of 15*l.* a year, reversion in 85 years	340
Barnsbury—14 and 15, Little Payne-street, 19 years, ground-rent 4*l.*	220

By E. STIMSON.

Wandsworth-road—Ground-rent of 24*l.* a year, reversion in 12 years	1,150
Walworth—14 and 16, Elizabeth-street, 19 years, ground-rent 6*l.* 6s.	290
Gray's Inn-road—29 and 31, Harrison-street, 17 years, ground-rent 12*l.*	400
Kentish Town—7, Healey-street, 66 years, ground-rent 6*l.* 10s.	410
Bermondsey—29, Monnow-road, 53 years, ground-rent 6*l.*	335
Kennington—1 and 2, Clayton-place, and 2 and 4, Clayton-street, 51 years, ground-rent 5*l.*	335

APRIL 10.

By DOWSETT & WOODS.

Old Kent-road, Oakley-place—The British Schools, 20 years, ground-rent 12*l.* 10s.	7 0

MEETINGS.

SATURDAY, APRIL 18.

London Association of Foremen Engineers and Draughtsmen.—Anniversary Dinner at Cannon-street Hotel 6 p.m.

Edinburgh Architectural Association.—Visit to Forth Bridge Works and Rosyth Castle.

St. Paul's Ecclesiological Society.—Visits to St. Giles's Church, Cripplegate (3.30 p.m.); and St. Sepulchre's, Snow-hill (4.30 p.m.), under the guidance of Mr. G. H. Birch.

MONDAY, APRIL 20.

Royal Institute of British Architects.—Tenth Ordinary Meeting. 8 p.m.

Surveyors' Institution.—Mr. A. J. Burrows "On Romney Marsh, Past and Present: a Sketch of the Reclamation of this and adjoining Marshes." 8 p.m.

University College.—Mr. Barclay V. Head on "Greek Numismatics." I. 4 p.m.

Society of Arts (Cantor Lectures).—Captain Abney, F.R.S., on "Photography and the Spectroscope." I. 8 p.m.

Inventors' Institute.—8 p.m.

Leeds and Yorkshire Architectural Society.—Members' *Soirée.*

Edinburgh Architectural Association.—Mr. James Clark on "Ornament." 8.30 p.m.

TUESDAY, APRIL 21.

Statistical Society.—Mr. E. W. Brabrook, F.S.A., on "The Relation of the State to Thrift: Ten Years' Statistics of Friendly Societies and Similar Institutions." 7.45 p.m.

Birmingham Architectural Association.—Mr. A. Reading on "English and Continental Renaissance Architecture." 7.30 p.m.

WEDNESDAY, APRIL 22.

Artists' Benevolent Fund.—Seventy-sixth Anniversary Dinner, Freemasons' Tavern. 7 p.m.

Civil and Mechanical Engineers' Society.—Mr. T. M. Rymer Jones "On Rendering Wood for Building Purposes Non-Inflammable." 7.30 p.m.

Society of Arts.—Mr. Henry Cunynghame on "Technical Education, with reference to the Apprenticeship System." 8 p.m.

THURSDAY, APRIL 23.

Parkes Museum of Hygiene.—Sir Spencer Wells on "Cremation." 8 p.m.

Society of Antiquaries.—Anniversary. 2 p.m.

Society of Telegraph-Engineers and Electricians.—8 p.m.

York Architectural Association.—Mr. B. Priestley Shires on "Theatre Planning and Construction." 7.30 p.m.

FRIDAY, APRIL 24.

Architectural Association.—Professor T. Roger Smith on "A Prism for Architecture." 7.30 p.m.

Metropolitan Board of Works.—Election of a District Surveyor. 12 noon.

SATURDAY, APRIL 25.

Architectural Association.—Visit to the Church of St. Bartholomew-the-Great, West Smithfield. 3 p.m.

Association of Municipal and Sanitary Engineers.—Lancashire and Cheshire District Meeting at Burnley. 11.30 a.m.

The Manchester Ship Canal — On Wednesday afternoon the Select Committee of the House of Lords appointed to inquire into the merits of the Manchester Ship Canal Bill gave their decision on the engineering portion of the scheme so far as the estuary of the Mersey is concerned. The Chairman stated that the committee were satisfied with the engineering portion of the scheme, and had decided to allow the Bill to proceed. The Committee will now commence an inquiry into the commercial aspect of the scheme.

The Student's Column.

DESCRIPTIVE GEOMETRY.—XI.

Produce a line, A, *forming with the elevation and the plan the angles* α *and* β.

WE assume that the line A passes through the point s in the elevation plane and require only to find its horizontal trace or foot, m. If we rotate A round the axis S^h S, we know, by its inclination a, its position A^1 when contained in the elevation plane, and that in the rotation the point m describes a circle round S^h. If, on the other hand, we rotate the line A round a horizontal axis of which the point s is the elevation, until the line A be parallel to the plan, we know that A^{11v} will be horizontal and A^{11h} will form the angle β with L T; besides which $S^h\,m^{11h}$, being the real length of the line sm, will equal sm^1. In this second rotation m^{11v} describes a circle round the point s, and m^{11h} a parallel to L T; we deduce therefrom the plan A^h and the elevation A^v required. (See fig. 55.)

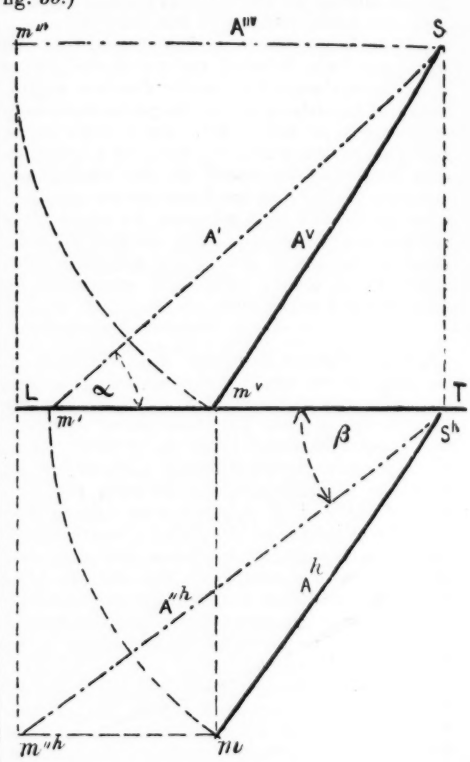


Fig. 55.

Let A *be a line of the elevation plane,* B *a line of the plan; from the point* O *where these lines meet we are required to draw a line,* F, *forming the angle* α *with* A, *the angle* β *with* B.

If we make the line F rotate round the line A as axis, it will describe a cone, defined by the angle α which F forms with A. If, on the other hand, F^{11} rotates round B as axis, it describes another cone, defined by the angle β formed by F^{11} and B. The real position of F is therefore at the intersection of these two cones, as shown in fig. 56.

We can readily draw F^1 the intersection of the first cone with the elevation, thanks to angle a, and we can draw F^{11} intersection of the second cone with the plan by means of angle β. If we take on F^1 and on F^{11}, the points m^1 and m^{11} at equal distance from o, they will meet in m when rotating round their respective axes A and B. The point m^1 will move in a plane of which P^v is the vertical trace; and the point m^{11} in a plane of which Q^h is the horizontal trace. If we take the plane Q as auxiliary elevation plane, we shall be able to draw on it the circle described by m^{11} and the trace P^{vi} of the plane P; the intersection m^{vi} of these two lines is the elevation of a point m of the line F; we can find therefrom the original projections m^h and m^v, then join them to the point O, which will give us F^h and F^v required. In fig. 56 we have shown the whole operation by a perspective view; in fig. 57 we give the operation itself as carried out in plan and elevation.

Find the distance from a point o *to a line* A.

We give two ways of solving this question.

Firstly.—We turn down the plane which contains the line A and the point o round $o\,c$

a horizontal line of that plane. When the plane is become horizontal, we can then easily draw a line, ox^{11}, perpendicular to the line A^{11}, and this is the distance required. We have not yet turned down a plane round any horizontal line thereof, but if we consider that we have lifted up the plane of the plan so that our ground line L^1 T^1 coincides with o^v c^v, the elevation of o c, the problem is brought back to one we have already dealt with, viz.:—turn down a plane round its horizontal trace. In our diagram b is a point of the line A; after the rotation of the plane it comes in b^{11} on a prolongation of m^h b^h, perpendicular to o^h c^h. The circle the point b describes in space has been turned down round the trace, m^h b^h, of its plane, and b^1 is the position of b on that plane, and m^h b^1 is the radius of the circle described. (See fig. 58.)

Secondly.—If, as in sketch, fig. 59, we take a vertical plane through the line A and from the point o take op perpendicular to that plane and px from p perpendicular to the line A, the distance ox from o to A is the hypothenuse of the right-angle triangle of which op and px are the sides. We carry out this operation in fig. 60 by making an auxiliary elevation on the vertical plane which contains the line A itself. We then take the distance o^h p^h from x^{v1} to m, and mp^{v1} is the distance required.

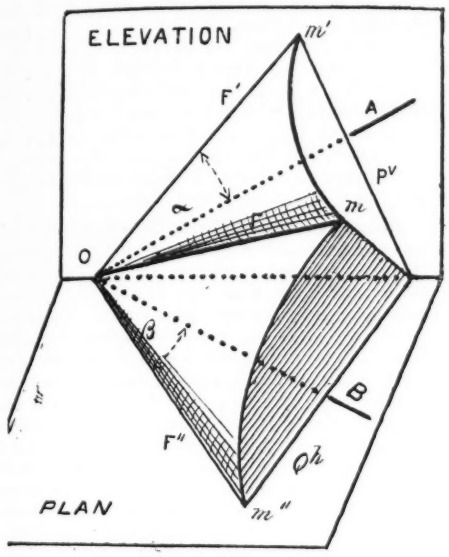


Fig. 56.

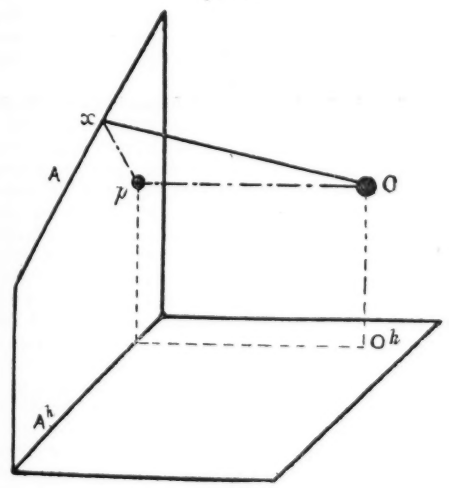


Fig. 59.

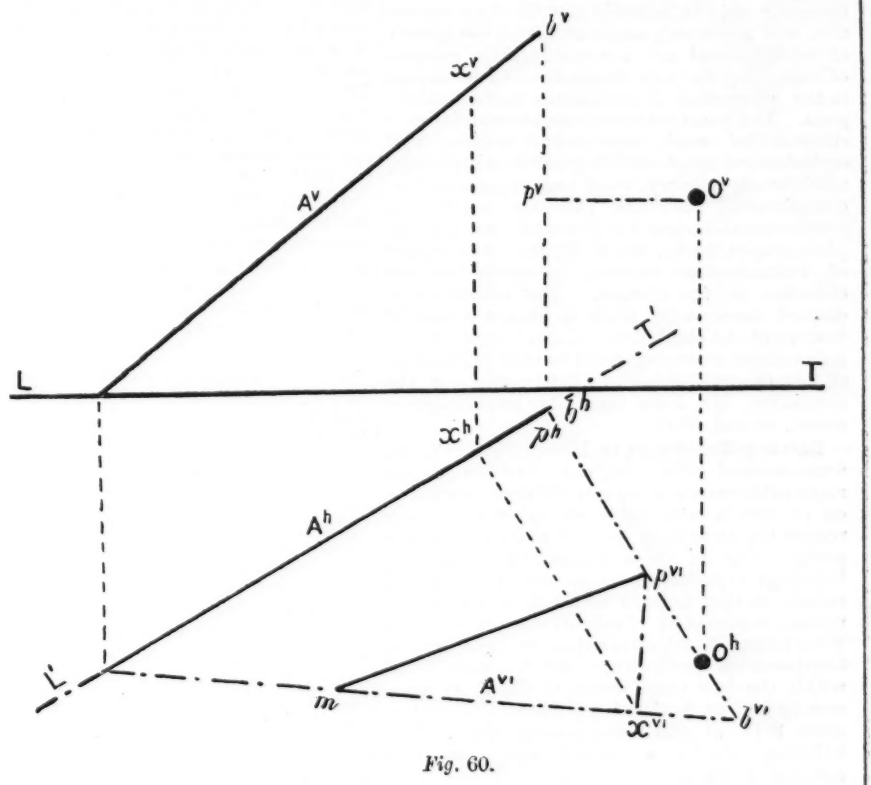


Fig. 60.

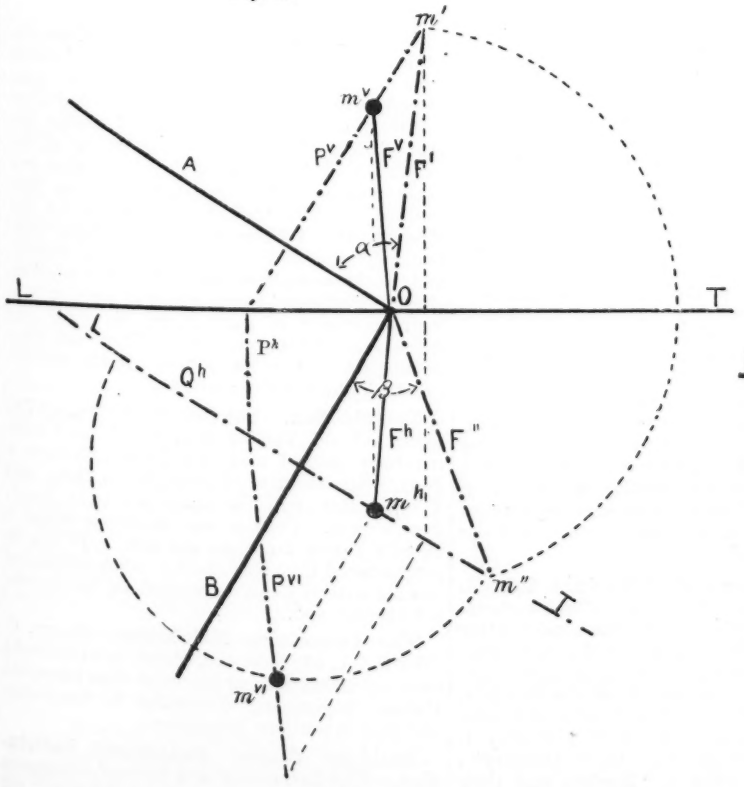


Fig. 57.

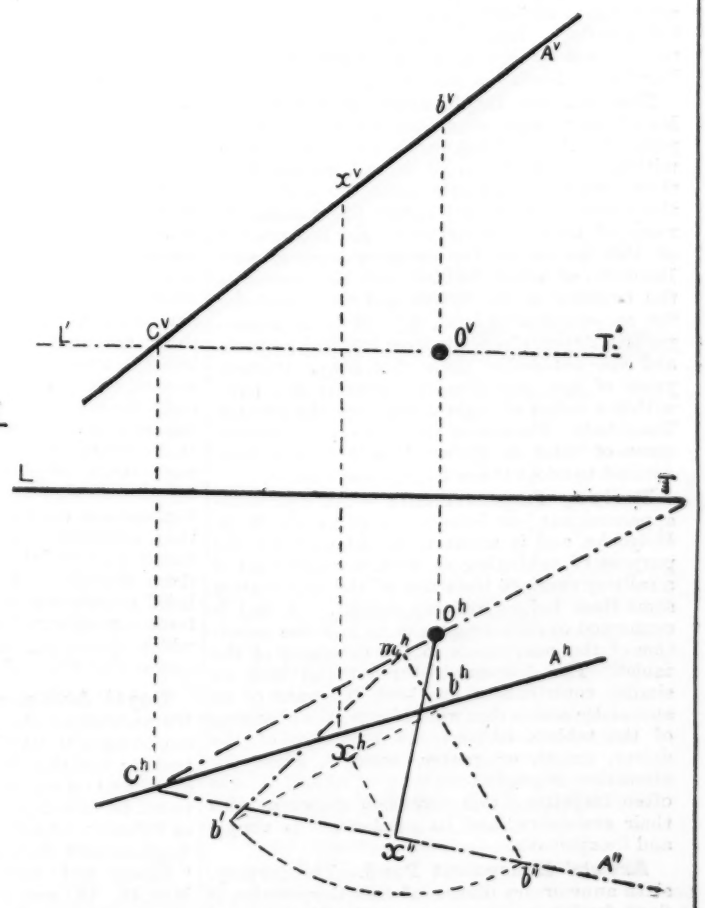


Fig. 58.

Miscellanea.

Ecclesiastical Art Exhibition.—At the Church Congress this year, which is to be held in the diocese of Winchester, at Portsmouth (on Southsea Common), there will be the usual exhibition of ecclesiastical art, and from the historic wealth of the diocese it is expected that the loan collection will be more than usually interesting. The exhibition will be held in the assembly-rooms of Cawte's Esplanade Hotel, next to Congress Hall, and close to the pier. The promoters of the exhibition hope that the clergy of the diocese and others possessing interesting objects, suitable for the lean collection, will generously assist in making the exhibit of ecclesiastical art a representation capable of sustaining the high repute the diocese enjoys in the estimation of antiquaries and archæologists. The loans may embrace goldsmiths' and silversmiths' work, ancient and modern, and ecclesiastical metal work in general, embroidery, needlework, tapestry, wood and ivory carving ecclesiastical furniture, paintings, drawings, architectural designs for churches and schools, photographs, books, and MSS., and other objects of archæological interest belonging to the churches of the diocese. The collection of disused communion plate is always a special feature of the exhibition. Contributors to the loan collection are requested to send particulars of any proposed exhibit to the manager of the exhibition, Mr. John Hart, 33, Southampton-street, Strand, W.C.

Lifting Buildings in Northwich.—Those unacquainted with the consequences of the rapid subsidences in the salt districts, now going on to such a lamentable extent, can scarcely realise the amount of its cost to owners of property. One of these consequences is that buildings have either to be pulled down and rebuilt, or they have to be lifted, if they are to remain tenantable. Probably the case of the Wheatsheaf Hotel and adjoining premises, in Castle-street, Northwich, which has been lifted within the last three weeks, is the most noteworthy one, as having been raised the most,—some 9 ft., at one simultaneous effort. This building, which, a month ago, was pronounced a dangerous structure, is now level, but how long it may remain so, with the rapid subsidence going on, remains to be seen. The next highest lift given at one time was probably that of the Winsford Town-hall, with five shops and a corn warehouse, all in one block, which was lifted, some time ago, 8 ft. 6 in., and that, we believe, without a dozen squares of glass being broken. Both these were carried out for the owners by Mr. R. Beckett, contractor, of Hartford.—*Northwich Guardian.*

The Harris Orphanage, Preston.—A Manchester paper says that the plans for the proposed Harris Orphanage have been submitted to the Harris trustees and approved by them, and they now only await the sanction of the Court of Chancery before the commencement of building operations. For the erection of this institution the trustees have granted 100,000*l.*, of which 30,000*l.* will be devoted to the building of the fabric, and the remainder for an endowment fund, &c. It is to accommodate 200 children who have lost both parents, and are not under three nor above thirteen years of age, providing the parents had lived within a radius of eight miles from the Preston Town-hall. The site of the orphanage is twelve acres of land at Fulwood, and it has been decided to adopt the cottage home system.

Railway Improvements.—An automatic apparatus has just been patented by Mr. W. R. Holyoake, and is about to be adopted for the purpose of exhibiting in each compartment of a railway carriage the name of the next station some time before arriving thereat. A bell is connected to each apparatus to call the attention of the passengers to the changing of the tablet. The difficulty hitherto found with all similar contrivances has been the want of an automatic action that would insure the changing of the tablets without the attention of the driver, guard, or porter, because, when the alteration depended on any of them, it was often forgotten; this invention dispenses with their assistance, and its mechanism is simple and inexpensive.

Artists' Benevolent Fund.—The seventy-sixth anniversary dinner of this Corporation is fixed for Wednesday next, at the Freemasons' Tavern, Viscount Hardinge in the chair.

Liverpool City Council.—At a meeting of this council, held on Wednesday last, it was (after some discussion) resolved, on the recommendation of the Insanitary Property and Artisans' Dwellings Committee, "That the sum of 100,000*l.* be borrowed under the Provisional Order of the 31st of May, 1884, confirmed by the Local Government Board's Provisional Orders Confirmation Act, 1884, and that application be made for the requisite sanction of the Local Government Board;" and also "That the money so borrowed shall, with the express permission of the Council, be applied only for the purposes of the 7th and 8th presentments." Mr. A. B. Forwood, in moving the resolution, said the council, in the past fifteen or twenty years, had received power to borrow two sums of money, each of 100,000*l.* The first 100,000*l.* was devoted to the improvement of courts and dwellings—the pulling down of houses and improving the character of the courts. The second 100,000*l.* was being expended under the new powers obtained by the corporation in 1884. At the commencement of this year, something like 60,000*l.* of that 100,000*l.* had not been paid away, but there were other presentments that had been made, embracing a large number of houses. The committee were confining their attention to certain districts of the town which they desired to put into sanitary condition before they went further. They were dealing with Henderson-street, Worthington-street, Limekiln-lane, Carlton-street, Chisenhale-street, and Back Portland-street. To complete the work in these districts would require 10,000*l.*, perhaps 15,000*l.*, in excess of the borrowing powers at present possessed, but they required the 100,000*l.* because they had to provide dwellings for the people who were unhoused. All they had provided in the shape of dwellings for the poor was the Nash-grove dwellings.——At the same meeting it was resolved that the salary of Mr. T. Shelmerdine, jun., Land Steward and Surveyor, be increased from 1,000*l.* to 1,100*l.* per annum, and that the salary of Mr. Clement Dunscombe, City Engineer and Building Surveyor, be increased from 900*l.* to 1,050*l.* per annum, to be increased in twelve months to 1,200*l.* per annum.

"Quarrying and the Preparation of Setts."—A meeting of the Liverpool Engineering Society was held on Wednesday evening last at the Royal Institution, Colquitt-street, Mr. W. E. Mills, President, in the chair. A paper, by Mr. C. H. Darbishire, A.M.I.C.E., on "Quarrying and the Preparation of Setts," was read by the author. The paper commenced by pointing out that the term "quarry" meant, primarily, the place where the stone was hewn and squared, whereas now it means the place where it is won from the rock, and not necessarily where it is squared. Attention was called to the fact that the dressing of stone, as far as is known at present, was probably one of the first accomplishments man possessed when the race became distinctly human, and that in every age quarrying stone, and working it up to serve a useful, or even merely an ornamental purpose, has always been one of the leading industries. At the present day, when traffic has become concentrated into comparatively narrow streets of cities and towns, to the extent it has done, exceeding frequently 200,000 tons per yard width of street per annum, the preparation of stone for paving to meet the exigencies of the case is of the greatest importance. The quarry described is situated at Penmaenmawr. The system adopted was fully dealt with, the various duties of the different sets of men being carefully gone into. Examples of the tools in use were exhibited, and they appeared simple enough in themselves, but it was explained that the art lay in using them skilfully. The paper concluded with a brief comparison of the system practically in force throughout North Wales with that under which quarrying is carried on in the large quarries of England.

Royal Academy: Architecture School. We understand that the class for architectural modelling will terminate for the session after to-day; and that Mr. Stannus will give a series of lessons on the Design of Architectural Ornament, on Monday evenings, from six to eight, as follows:—April 20, "Classification of Bands, Borders, and Strings"; April 27 and May 4, "Bands and Strings, and their Corners"; May 11, 18, and June 1, "Borders and their Angles"; June 8 and 15, "Friezes, and their Corners."

The Chancery-lane Safe Deposit Company's establishment, in New Stone-buildings, Chancery-lane, was to have been formally opened by Mr. Alderman Fowler, M.P. (now Lord Mayor), on Thursday evening last, but owing to the death of the late Lord Mayor the inaugural banquet has been postponed for a short time. Nevertheless, we believe it is the intention of the proprietor to open the place for business next week. The premises are so devised as to provide elaborate precautions for the safe custody of deeds and valuables of all kinds. The safes and strong-rooms have been constructed by Messrs. Milner & Co. The vestibule and staircase are paved and lined with marble work by Messrs. Salviati, Burke, & Co. We defer a more detailed description of the establishment, which has been devised by and carried out under the superintendence of the proprietor, Mr. Thomas Clarke. We believe it is proposed to transfer it to the hands of a company now in course of formation.

Enlargement of Ilkley Hospital.—In July last the Committee of the Ilkley Convalescent Hospital decided that the accommodation should be extended, so that the number of patients might be raised from 70 to 100. Plans prepared by Mr. C. H. Hargreaves, architect, Bradford, were approved, and a portion of the work is now being executed under his supervision. As the hospital was originally constructed, there was no dining-room, the women's day-room having been used for that purpose by the whole of the inmates. By means of the extension a separate dining-room will be provided, there will be larger and better kitchen accommodation, and additional dormitories. The old building is of a plain domestic Gothic character, and the new buildings correspond with it. The enlargement of the main building is effected by extending the east and west wings. The cost of the additional buildings will be about 2,100*l.*

York Architectural Association.—On the 9th inst. Mr. George W. Milburn delivered a lecture on "The Decorated Period of Gothic Ornament" before the members of the above Society in the saloon of the Victoria Hall, Goodramgate. The President, Mr. A Pollard, occupied the chair. The lecturer described at length and with numerous sketches upon the blackboard how the thorn, vine, ivy, oak, and maple were introduced in the formation of capitals, crockets, diapers, spandrels, &c. At the conclusion, the President moved a hearty vote of thanks to the lecturer, which was seconded by Mr. G. J. Monson, and carried. Mr. T. S. Worthington, of Blake-street, was elected an honorary member of the Association. The subject of the churches scheduled to be disused or demolished was brought forward, but after a short discussion the question, for want of time, was postponed for future consideration.

An Old Pulpit in a New Place.—A very fine oak pulpit, carved in the semi-classic style of the fifteenth century, has just been placed in the nave of Winchester Cathedral on a base of oak, a work which Mr. J. Fielder has carried out. The history and object of the pulpit is told in the following inscription on a brass plate:—"This pulpit, formerly in New College Chapel, Oxford, was given by the Warden and Fellows to Charles Mayo, D.D., formerly one of the Fellows of that Society, and it is completed and presented to Winchester Cathedral by members of his family in loving memory of Jane Mayo, his sister, who fell asleep October 8, 1884." There are other memorials of the Mayo family in the stained-glass windows in the north aisle.

Temple Bar.—The *City Press* says:—"The stones of old Temple Bar, which have been carefully stowed away by Messrs. Mowlem & Burt, will shortly be brought to light, and Temple Bar will be again set up in King's Bench-walk. Thus it will be almost within a stone's throw from its old site." It will be remembered that this site for the re-erection of the old gateway was suggested in the *Builder* a fortnight ago.

The Inventions Exhibition.—Messrs. C Isler & Co., of Southwark-street, have secured a contract for supplying fifteen of their Improved Patent Registering Turnstiles to the International Inventions Exhibition.

Builders' Clerks' Benevolent Institution.—The Carpenters' and Masons' Companies have each voted the sum of ten guineas in aid of the funds of this charity.

The Disposal of Refuse Matter.—Under the presidency of Sir Robert Rawlinson, two papers dealing with the disposal of sewage and town refuse were read on Wednesday evening last at the Society of Arts. The first, by Dr. Thomas Hawkesley, related to the abolition of water carriage in the removal of effete organic matter from towns. The second paper, read by Dr. B. W. Richardson, had reference to the removal of refuse independently of sewage. This he comprised under the heads of house refuse, trade refuse, market refuse, street sweepings, condemned food, slaughter-house offal, and stable refuse; and quoting the authority of Colonel Haywood, Engineer to the City of London, he said that, refuse in the City under the first four heads alone amounted to about 61,230 cartloads per annum. The more rapidly the refuse was removed the better for the health of the community, and it appeared that in towns where there was quick removal there was less disease—a fact which showed that these agencies had an effect, indirect at all events, upon health. Everything connected with this removal, except perhaps in the City, was exceedingly bad in London and most large towns, but this should not be the case, seeing that a profit arose from it. The means adopted for removing house and trade refuse in the City might be taken as an example for other towns in England; but in the case of seaside places he recommended a system of floating barges such as those in use on the Tyne. He condemned the common system of contracts, and insisted that the parish authorities should themselves undertake the removal of refuse.—The chairman said he felt himself debarred from taking part in the discussion, but, though he was silent, he did not wish it to be understood that he agreed with all the arguments adduced. This, however, he might say, that he considered scavenging as the root of sanitary progress.—A discussion ensued, in which Dr. Alfred Carpenter and other gentlemen took part.

Line of Frontage Case.—In the late frontage line case of the Vestry of St. Marylebone *v.* Rose, tried before the Divisional Court, and mentioned in our issue of last week [p. 508], an application was made on the 14th inst. to Mr. De Rutzen at the Marylebone Police-court for an order of demolition, which was granted; as also one in the case of an adjoining owner, both of the buildings being used as florists' shops.

The Westminster Hall Question.—Thursday's *Standard* says:—"The Select Committee on the Restoration of Westminster Hall will meet to-morrow to consider their report. Two draft reports have been prepared, one by the chairman, which substantially approves of Mr. Pearson's plans, and the other by Mr. Dick Peddie, which proposes that the buttresses should be repaired, and that the general question of the restoration of the cloisters should be deferred for future consideration."

The Safety of Cast-Iron Columns.—The safety of cast-iron columns in case of fire, as compared with columns of wrought iron, or pillars of stone, brick, or cement concrete, has been the subject of investigation by Professor Bauschinger, of Munich. It will be remembered that the Berlin police authorities, in consequence of unfavourable experiences with cast-iron columns in recent fires at Berlin, issued regulations forbidding the use of such supports in the construction of dwelling-houses, but permitting the employment of columns of wrought-iron and clinkers in cement mortar. Cast-iron columns may only be employed if they are sur. rounded with immovable mantles of wrought iron separated from them by an air space. Professor Bauschinger heated cast and wrought-iron columns weighted with burdens usually imposed in structures first to 300°, next to 600°, and finally to red-heat, and suddenly cooling them afterwards by a jet of cold water, as applied in extinguishing fires. The experiments demonstrated that cast-iron columns, although they were bent by red-heat, and showed transverse cracks when water was applied, supported the weight imposed upon them, whilst wrought-iron columns were bent before arriving at a state of red-heat, and were so much distorted by the application of water that a straightening was out of the question. In reality, they would have collapsed under the weight they had to support. Professor Bauschinger concludes from his experiments that cast-iron columns, notwithstanding cracks and bends, would continue to support the weights imposed upon them, whilst wrought-iron columns would not. In examining pillars of stone, brick, and cement concrete, the latter proved to be the best. Concrete pillars withstood the action of fire for from one to three hours; those of ordinary bricks, as well as those of clinkers set in cement mortar, displayed great resistance; whilst natural stone,—granite, limestone, and sandstone,—were not fireproof.

COMPETITIONS, CONTRACTS, & PUBLIC APPOINTMENTS.

Epitome of Advertisements in this Number.

COMPETITIONS.

Nature of Work.	By whom required.	Premium.	Designs to be delivered.	Page.
Public Baths	Cor. Bootle-cum-Linacre	50*l.*, 25*l.*, and 10*l.*	June 1st	ii.

CONTRACTS.

Nature of Work, or Materials.	By whom required.	Architect, Surveyor, or Engineer.	Tenders to be delivered.	Page.
Circular Reservoir	Grdns. Haslingden Un.	*Official*	April 20th	ii.
Engine-House	Tottenham Local Board	— De Pape	April 21st	ii.
Road Material	Lewisham Brd. of Wks.	*Official*	do.	ii.
General Repairs, Dwelling House	Chelsea Guardians	do.	do.	ii.
Paving Works	Vestry of St. Luke's	do.	April 22nd	xiv.
Railway Stores	L. B. and S. C. Ry. Co.	do.	do.	ii.
Re-constructing Sewer, &c.	Vestry of the Parish of St. George-in-the-East	do.	April 23rd	ii.
Additions, &c., to Orphanage Buildings	Railway Servants' Orphanage, Derby	do.	April 24th	ii.
Making-up Carriageway	Hornsey Local Board	T. de Courcy Meade	April 25th	ii.
Construction of New Road, S. Acton Estate	The Proprietors	C. N. Lailey	April 27th	ii.
New Police-Station	The Receiver, Metro. Police District	*Official*	do.	ii.
Retort House, &c.	Grays Gas Co.	F. Morris	April 28th	xiv.
Water Vans for Road Watering	West Ham Local Brd.	Lewis Angell	do.	xiv.
Cast-Iron Flexible Pipe Outfall Sewer	Dover Corporation	*Official*	do.	ii.
Foundations for Station, &c., Bldngs, Bradford	Midland Railway Co.	A. A. Langley	May 1st	ii.
Cleaning and Painting	do.	do.	do.	ii.
Roadmaking, &c.	United Land Co., Lim.	*Official*	May 4th	ii.
Enlargement of Post-Office, Landport	Com. of H.M. Works	do.	May 5th	ii.
Boys' School, &c.	Aberdare School Board	do.	May 6th	ii.
Completion of New Sanitary Turret, &c.	Guardians of Chelsea	A. & C. Harston	do.	ii.
Erection of Six Small Houses (2nd Portion)	Proprietors, Belmont Estate, Sutton	E. S. & H. Boosey	Not stated	ii.

PUBLIC APPOINTMENTS.

Nature of Appointment.	By whom Advertised.	Salary.	Applications to be in.	Page.
Engineering Assistant	Sheffield Town Council	150*l.*	April 29th	xviii.

TENDERS.

For new warehouses, corner of St. Mary Axe and Bevis Marks. Mr. E. Collins, architect, 61, Old Broad-street. Quantities supplied by Messrs. Batstone Bros.:—

Lawrence & Sons	£4,960 0 0
Patman & Fotheringham	4,673 0 0
Shurmur	4,590 0 0
Brass & Son	4,250 0 0
Colls & Sons	4,216 0 0
Shepherd	4,200 0 0
Downs	4,184 0 0
Kirk & Randall	4,022 0 0
Nightingale	3,943 0 0
Morter	3,939 0 0
W. & F. Croaker	3,827 0 0

For part rebuilding, underpinning, and strengthening the tower of St. Leonard's Church, Hythe-hill, Colchester, damaged by the late earthquake, for the Rector and Churchwardens. Messrs. Ebbetts & Cobb, architects, London and Colchester:—

Chambers	£949 0 0
Everett & Son	700 0 0
Dobson	488 0 0
Ambrose	479 6 0

For a boat-house, Sea Front, Dover, for the Dover Rowing Club. Messrs. Cresswell & Freeman, architects, Dover:—

	Slate Roof.	Iron Roof.
F. Clark, Dover	£125	—
Whelch & Co.	120	£105
W. T. Adcock	115	110

For alterations to the Angel and Crown, 235, Upper-street, Islington, for Messrs. Gerlach & Cox. Mr. R. A. Leworth, architect, Bishopsgate-street Within:—

G. Colls	£860 0 0
Shurmur	693 0 0
Larter & Son	674 0 0
Toms	646 0 0
Marr	645 0 0
Jackson & Todd	623 10 0

Accepted for new Baptist Chapel and school at Littleborough. Mr. F. H. Shuttleworth, architect, Littleborough:—

Masons and Joiners.—E. Taylor & Co., Littleborough	£1,470 0 0
Plastering.—T. Blacka, Todmorden	139 0 0
Plumber.—R. Hudson, Littleborough	104 0 0
Slating.—S. Barnes & Sons, Todmorden	70 0 0
Painting.—A. Stansfield, Todmorden	80 0 0

Accepted for two houses at Littleborough, for Mr. Jno. Kershaw. Mr. F. H. Shuttleworth, architect:—

Mason.—B. Hartley, Littleborough	£328 0 0
Joiners.—E. Taylor & Co., Littleborough	110 10 0
Plumber.—J. Mills, Littleborough	32 0 0
Plasterer.—T. Blacka, Todmorden	29 10 0
Slaters.—S. Barnes & Sons, Todmorden	20 5 0
Painter.—C. Whitworth, Rochdale	11 2 5

Accepted for two houses at Littleborough, for Mr. A. Spencer. Mr. F. H. Shuttleworth, architect:—

Mason.—B. Hartley, Littleborough	£190 0 0
Joiner.—N. Rigg, Littleborough	100 0 0
Plasterer.—T. Blacka, Todmorden	29 0 0
Slater.—R. Woolfenden, Rochdale	28 10 0
Plumber.—J. Mills, Littleborough	19 5 0
Painter.—C. Whitworth, Rochdale	10 8 0

For the extension of sewerage through the upper portion of Freemantle, for the Shirley and Freemantle Local Board. Mr. Herbert L. Tayler, surveyor:—

Rowe	£480 0 0
Batten	425 0 0
Richards	420 0 0
Penny	393 0 0
Faulkner	385 0 0
Butt	380 0 0
Sibsey	348 0 0
Simms	335 0 0
Mearse	329 0 0
Crook & Smith,* Southampton	317 0 0

[All of Southampton and Shirley.]

* Accepted.

For building additions to Lucton Foundation School, near Hereford. Mr. F. R. Kempson, architect, Hereford. Quantities by Mr. F. Downing, 7A, Whitehall-yard:—

Page & Son	£7,200	0	0	44 weeks.
B. Weale	7,158	0	0	52 ,,
W. Cullis	7,100	0	0	— ,,
Horsman & Co.	6,999	0	0	50 ,,
C. Edwards	6,650	0	0	42 ,,
T. Collins	6,450	0	0	— ,,
R. Yates	6,361	0	0	52 ,,
Treasure & Son	6,196	0	0	36 ,,
C. Claridge	6,178	0	0	50 ,,
Jones & Son	5,697	0	0	40 ,,

For works required to be done in making alterations and additions to St. Paul's Church, Wandsworth, for the Building Committee. Mr. Henry E. Coe, architect. Quantities supplied by Mr. H. P. Foster:—

Lucas & Son	£1,098 0 0
H. Burman & Sons	1,087 0 0
T. Lapthorne & Co.	998 0 0
R. Parsons	911 0 0
T. Gregory	895 0 0
Turtle & Appleton*	875 0 0

* Accepted (subject to certain reductions) at 605*l.*

For additional wing and chapel at Princess Mary's Village Homes, Addlestone. Mr. T. Heygate Vernon, architect. Quantities by Mr. Cecil G. Saunders:—

G. Candler, Streatham	£3,500 0 0
C. & T. Adkins	3,480 0 0
Higgs & Hill	3,480 0 0
Prestige & Co.	3,194 0 0
T. Gregory, Clapham Junction	3,185 0 0
Stimpson & Co.	3,180 0 0
J. Holloway, Lavender-hill	3,080 0 0
W. Johnson, Wandsworth	2,988 0 0

For alterations and additions to the premises containing the Roman pavement in Jewry Wall-street, Leicester, and other works in connexion therewith. Quantities and specification by Mr. J. Gordon, C.E., Borough Surveyor:—

T. Bland & Son	£564	10	0
F. Major	535	10	0
Jno. Chester	512	0	0
T. Duxbury & Sons	500	0	0
T. C. Tyers	492	0	0
J. O. Jewsbury	489	14	0
Harry Bland (accepted)	400	0	0
J. B. Turner	388	8	0

[All of Leicester.]

For the erection of a boiler-house, coal-houses, and other works, at the Borough Lunatic Asylum, Leicester. Quantities and specification by Mr. J. Gordon, C.E., borough surveyor:—

T. Bland & Sons	£500	0	0
T. C. Tyers	464	0	0
Chas. Bass	460	0	0
J. O. Jewsbury	435	15	0
J. Riddett	435	0	0
T. B. Turner	434	11	6
T. Tuxbury & Son	430	0	0
F. Major	428	0	0
T. Richardson & Sons	427	10	0
Jas. Stevens (accepted)	419	0	0

[All of Leicester.]

For the erection of a residence at Hampton Wick. Messrs. Bray, Webb, & Co., architects, 14, Warwick-court, High Holborn:—

Gibbs & Flew (Limited)	£1,953	0	0
Harris	1,695	0	0
Thos. Wontner Smith & Son	1,645	0	0

For alterations, &c., at 55, Harley-street, Cavendish-square. Mr. Ernest Turner, architect, 246, Regent-street:—

Hebblethwaite	£745	0	0
Curtis	549	0	0
Alden & Plater	498	0	0
J. T. Howe	497	0	0
Thos. Wontner Smith & Son	438	0	0
Patman & Fotheringham	430	0	0

For the erection of a hospital for infectious diseases, for the Wrexham Rural Sanitary Authority. Mr. Alfred C. Baugh, architect, engineer to the Board. Quantities supplied:—

Johnson Bros., Hereford	£7,470	4	1
David Davies, Cardiff	6,450	0	0
Chaloner, Rossett	6,243	0	0
Griff. Griffiths, Criccieth	5,881	0	0
Hughes & Owen, Wrexham	5,841	0	0
W. E. Samuel, Wrexham	5,625	0	0
J. Hamilton	5,380	0	0
Davies Bros., Wrexham (accepted)	5,239	10	6

For decoration and repairs at Stoke Newington Wesleyan Chapel. Mr. F. Boreham, architect:—

Bradford	£368	10	0
Richards	333	15	0
Stapleton	331	12	6
L. H. & R. Roberts	325	0	0
Chessum	311	0	0

For rebuilding 32 and 34, Great Portland-street, for Mr. T. Elsley. Quantities by Messrs. Barber, Boxhall, & Barber:—

Langridge	£5,400	0	0
Greenwood	5,386	0	0
Higgs & Hill	5,340	0	0
Hall, Beddall, & Co.	5,184	0	0
Williams	4,957	0	0
Wm. Oldrey	4,877	0	0

For additions and alterations at Raven Villa, Blythe-hill, Catford. Mr. J. Goldsack, architect:—

	General Works.	Bath extra.
Carter & Son, New Broad-street	£239	£25
G. Ruffell, Forest-hill	178	16

Accepted for five new houses, butcher's shop, stabling, sheds, and additional premises, at Stocksbridge, for the Stocksbridge Co-operative Society. Mr. Robert Dixon, architect, Barnsley. Quantities by the architect:—

Excavator's, Mason's, Bricklayer's, and Slater's Work.
Kenworthy & Brearley, Stocksbridge.

Carpenter and Joiner's Work.
James Thompson, Stocksbridge.

Total of above trades £1,427 17 6

Accepted for alterations and additions at the Prince Regent, North-street, Walworth. Mr. Thos. Lock, architect and surveyor:—

Galland, Hoare, & Co., Walworth	£685	15	0

For proposed alterations at Ericht Lodge, West Dulwich, for Mr. W. F. Hammond. Mr. H. I. Newton, architect, Queen Anne's-gate:—

Lamble	£1,253	0	0
Godden	1,198	0	0
B. Cook (accepted)	1,119	0	0

For the erection of a new house, shop, and bakehouse in Spring-road, Bedford, for Mr. H. Mortimer. Mr. F. F. Mercer, architect. Quantities supplied:—

T. Laughton	£1,039	15	0
Warton & Walker	863	0	0
G. Harrison	859	0	0
Jas. Potter	854	0	0
J. P. White	839	0	0
G. Todd	809	7	0
F. H. Long	695	10	0

For two pairs of villas, Finchley, for Mr. J. Winckworth. Mr. T. F. Shaw, architect, Harlesden:—

Cooper	£2,667	0	0
Pryor	2,600	0	0
Jones	2,400	0	0
Greenwood	2,300	0	0
Penny & Co. (accepted)	2,200	0	0

Accepted for pair of villas at Craven Park, Willesden. Mr. T. F. Shaw, architect, Harlesden:—

G. Hardy	£1,350	0	0

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J. P.—S. R. F. Rome (thanks).—A. N. H.—J. G. W.—"An Old Subscriber" (if you wrote openly and pointed out what you thought a defect you would be thanked for doing so, but we will not do anything for anonymous correspondents. A man who writes anonymous attacks does an ungentlemanly action; and, if no one has taught you that, you had better learn it now).—W. M.—C. V. & Co.—M. & Co.—F. J. C.—"Justitia."—L. C. M.—F. B.—W. R. H.—J. D.—A. W. (letter and tracings received).—R. S. & G.—M. & S.

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